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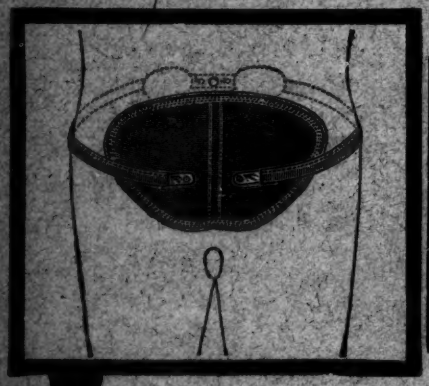

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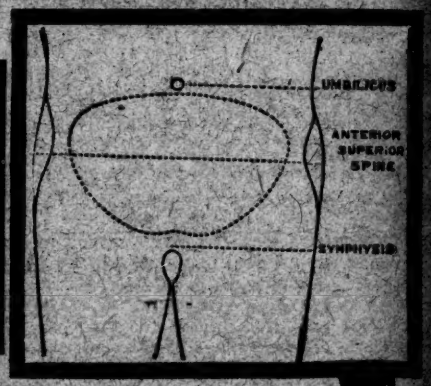

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RESEARCHES ON PHAGOCYTOSIS.

BY

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I. INTRODUCTION.

THE investigations on the life of phagocytes, which during recent years have occupied myself and my collaborators, are a continuation of researches begun several years ago (1883) with the object of ascertaining the influence of salt solutions of various concentrations upon the red blood corpuscles, and the significance of these results with regard to the functions of the body. These researches on the red blood corpuscles, which introduced physical chemistry into medical science, were confined to the study of their chemical and volumetrical alterations.

But the influence of the salt solutions on the very life of the cells could not well be tested on those particular objects, although systematically investigated. We have felt this from the beginning, and repeatedly asked ourselves whether the solutions producing the chemical and volumetric changes of the red blood corpuscles had or had not seriously damaged these cells, and thus, whether it was possible to apply the conclusions arrived at to problems regarding life itself. Therefore, wherever it was possible, we examined whether the phagocytes, being submitted to the same agencies, kept their phagocytic power. This was always the case. This conclusion enhances the value of our researches on red corpuscles, the more so because the chemical and volumetric alterations of the white cells corresponded with those of the red. But a systematic study of the life of leucocytes had not, previous to our researches, been undertaken, and this is rather surprising.

The phagocytes are a suitable object for studying life phenomena. In the first place, they are not such complicated organs as the muscles, heart, brain, etc.; they are simple cells, easily isolated. Secondly, it is possible to follow quantitatively the effect on their life of slight alterations of their natural medium.

It is obvious that the phenomena produced by the agency of solutions not dangerous to life are, in fact, nothing else but the effect of reactions which finally will help us to penetrate further into the physical and chemical structure of the living cell.

Yet not only from a theoretical but also from a practical point of view the life of these cells deserves our interest; but until now it has not been, as such, the object of a systematic investigation, a fact Metchnikoff himself regretted in a paper he read some years ago to the students of the University of Amsterdam, on "Réactions Phagocytaires":

> Nous ne sommes qu'au début. Lorsqu'on connaîtra mieux la physiologie des phagocytes, on cherchera des méthodes pour augmenter l'activité de ces éléments dans la lutte contre les microbes, et on cherchera d'autres pour préserver contre l'attaque des phagocytes les cellules nobles de notre corps.

Now I must confess that the importance of the phagocytes for the defence of our body against bacteria has not been the first and principal reason of my investigations with regard to these cells: the principal reason was that they were an excellent object for researches of a general biological nature.

I think a physiologist in the first place must practise science for its own sake, not asking whether his work may be of immediate practical use; but should he, however, accidentally stumble upon an idea which may be directly used for the bodily welfare of mankind, this should not prevent him from giving his attention thereto—in fact, it is his duty to do so.

II. METHOD OF INVESTIGATION.

Our method has been very simple. White corpuscles (leucocytes) from the blood of a horse are transferred to various media mixed with very small particles of carbon. After having stood some thirty minutes in an incubator at body temperature a great many of the cells have eaten up carbon. Microscopical preparations are made, and it is ascertained what percentage of the leucocytes has taken up carbon. *This percentage is the measure of the degree of phagocytosis, and gives the value of the influence of the various agents used on that function of life.*

Suppose in examining 600 leucocytes lying in their natural medium I find that 300 of them have taken up carbon, the percentage of phagocytosis can then be expressed by $\frac{300}{600} \times 100 = 50$ per cent. In order to examine, for instance, the influence of small amounts of acid, I add this substance to the serum and repeat the same experiment under the same conditions. I now find that of the 540 examined leucocytes only 200 have taken up carbon. The phagocytosis is now expressed by $\frac{200}{540} \times 100 = 37$ per cent. Thus the addition of acid to the serum has lowered phagocytosis.

This calculation is based on the principle that the phagocytic power of the individual phagocytes present in a suspension is unequal, a fact which cannot be wondered at when we take into consideration that they are of different ages. The more detrimental the action of the agent the smaller should be the number of phagocytes which take up carbon in the same space of time.

Our selection of an indifferent substance such as carbon instead of bacteria was based upon the fact that we feared our work would otherwise become too complicated. We here refer to the fact established by Sir Almroth Wright and his school that most kinds of bacteria, before they can be taken up by the phagocytes, must undergo a certain amount of sensitization. Hence it follows that the intensity of phagocytosis will not only be influenced by the agent, as such, but also by the degree of "sensitization" the particles have undergone. Another fact which had to be borne in mind was that bacteria sometimes secrete poisons, which have an injurious effect on the phagocytosis. Even dead bacteria contain poisons.

The selection of carbon as an indifferent substance instead of the usual grains of carmine was based upon the greater facility and accuracy with which the taking up of carbon can be ascertained. I shall not give here a detailed description of the method of obtaining the leucocytes or of preparing the carbon, or of the method of determining the percentage of cells which have eaten carbon. I prefer to give some of the more striking results. A glance on the figures in the tables will give an idea of the exactitude of the method, an exactitude which cannot be obtained with bacteria.

III. RESULTS.

1. *The Influence of Small Amounts of Calcium.*

In examining systematically the influence of the addition of small amounts of various salts (ions) to the blood serum, it was found that very small quantities of calcium increased the phagocytosis to a considerable extent. An addition, for instance, of 0.005 per cent. of calcium chloride ($CaCl_2$) to the natural medium (serum) caused an increase of about 22 per cent. in the phagocytic power. This favourable effect becomes even more strongly manifest when, instead of being added to the suspension of phagocytes in serum, the calcium is added to a suspension of phagocytes in a solution of sodium chloride (common salt) in which phagocytosis occurs almost to the same extent as in serum.

These investigations have been continued in two directions. In the first place, we asked ourselves whether the influence of calcium would also manifest itself in the living body. All experiments had hitherto been made outside the body. It will be remembered that on placing under the skin (for instance, on the inside of the thigh of a rabbit) small capillary tubes, closed at one end and filled with an extract of bacteria in a solution of sodium chloride, phagocytes enter these tubes. Chemiotaxis is based upon the creeping movement of the phagocytes towards the excretions and secretions produced by the bacteria.

After a certain lapse of time the open part of the capillary tube is filled with a white column consisting of phagocytes. If, in fact, calcium promotes the activity of the phagocytes not only in the phagocytic process described above, but also in the living body, we argued it might be expected that by calcium that mobility of the cells, which here finds its expression in chemiotaxis, would be accelerated. Therefore we determined the length of the white column formed in the capillary tube

with animals, either treated with calcium or not so treated.

We expected to find that in rabbits treated with calcium the white column would, after the same space of time, be longer than in animals not having been treated with calcium. We have used two methods, which gave the same result. I will mention only one. It consisted in injecting into the rectum of two series of animals a solution of sodium chloride mixed for one series with calcium, and for the other without calcium, and then examining the length of the column of phagocytes penetrating into the capillary tubes.

The difference between the two series was considerable. The calcium rabbits showed the greater degree of chemiotaxis, although the amount of calcium chloride used was very small—namely, 0.06 gram—a quantity corresponding with that given to man in mineral waters rich in calcium. Let us add that a natural mineral water, rich in calcium, used in our experiments gave the same results as the calcium chloride solution.

What can be said of the mechanism of this effect? The calcium, on being absorbed by the mucous membrane of the rectum, enters the blood circulation and by this is carried into the lymph of the tissue spaces, where the glass capillary tubes are placed. The phagocytes which are there will soon undergo the stimulating influence of the calcium thus introduced—that is, their mobility will be increased and chemiotaxis will be promoted.

Even without measuring the length of the phagocyte columns, we may convince ourselves that our conclusion as to calcium promoting the activity of the phagocytes is a correct one. On opening the skin wound it is immediately seen that in the mineral water rabbits a much thicker mass of phagocytes is gathered round the tubes than in the pure sodium chloride rabbits. The same thing we observed invariably in all experiments in which NaCl solution containing calcium chloride was injected.

Taking it for granted that phagocytosis plays a part in the defence against microbes, we may infer from the above that an enrichment of our blood, and through this also of the lymph spaces, with small amounts of calcium, must have a favourable effect on local and other infections.

There are many experiences supporting this view. I will mention only two examples. In the first place, Sir Lauder Brunton has used with great success calcium chloride in pneumonia. Other clinicians have also met with success along the same lines; for instance, Crombie, who some years earlier, in the hospital of Calcutta, saw the mortality decrease from 38.6 to 5 per cent. He was inclined to attribute the influence of calcium to an action on the poison excreted by the pneumonia bacteria. But for this there is no evidence. Sir Lauder Brunton has recommended calcium for getting amelioration of the heart action. In recovery from pneumonia the amelioration of the heart action is of the greatest importance. So it was quite rational that the famous clinician and pharmacologist advised calcium for this purpose—in the first place, because it was pointed out by the work of Sydney Ringer that calcium is absolutely necessary for the heart function, and, on the other hand, Langendorff and Hueck had found that by the injection of calcium into the circulation of a cat the action of the heart was considerably strengthened.

Sometimes it happens that during surgical operations the heart beat is stopped by the inhalation of chloroform. The idea occurred to me that in this case calcium might be able to be of good service. Therefore I tried to improve the heart action by intravenous injection of calcium in animals which had purposely been given too much of the anaesthetic. I had no success, so I began to doubt whether calcium was really capable of stimulating even the normal heart. In a number of experiments I found that injection of calcium had no effect on the heart beat of a normal animal. Studying the original article of Langendorff with renewed attention, I saw that he had performed only one experiment. His great reputation had given his assertion general acceptance, and so it had become a fact in the literature. Obviously the amount of calcium in the normal blood serum provides already just the optimum quantity for the heart function.

Thus this favourable effect of calcium in pneumonia not being explained by the influence of calcium on the heart, we had to look for another reason. It was therefore most natural to remember the stimulating action of calcium on phagocytes, which in pneumonia play such a preponderant part.

My second argument for the probability that calcium is of importance in infectious diseases is this: Labourers in limekilns do not get tuberculosis; in Holland these workmen cover any wound they receive with lime.

The significance of calcium has for some time past been occupying the special attention of biologists and pathologists in an increasing degree, and I shall speak of it further now, and of the cause of the promotion of the activity of the phagocytes in phagocytosis and chemiotaxis by calcium, only to make one remark. We might be inclined to attribute the increase of the plasticity to a modification in the aggregation of the colloid protoplasm particles as a consequence of the electric charge caused by the entering of a number of bivalent ions into the cells. This explanation, however, can scarcely be the correct one here, for experiment shows that other bivalent kations—namely, barium, strontium, and magnesium—do not augment the amoeboid motion—that is, of phagocytosis and chemiotaxis. It must be assumed, then, that the action of calcium in this case is based upon a hitherto unknown specific biochemical property of this metal.

2. *Influence of Iodoform on Phagocytosis.*

Every one knows that for the last thirty years iodoform has been successfully applied in the treatment of wounds and chronic inflammations. At first it was thought that this favourable effect was based upon an antiseptic action, but the idea was relinquished when it was found that lower organisms develop fully in a medium containing iodoform. Then other hypotheses were suggested, which need not be dwelt on. They were founded mainly on iodine being split off. None of these suggestions have proved satisfactory. For reasons unnecessary to state here, we have raised the question whether the favourable effect of iodoform on local infections may not be due to the stimulating effect of this substance on phagocytosis. To answer this question, iodoform solutions of different concentrations in a common salt solution of 0.9 per cent. were prepared and mixed with a thick suspension of white blood corpuscles. After having added carbon particles, the mixtures were left to themselves for half an hour in an incubator at 37° C., and then cooled down. Finally, microscopic preparations were made and examined to determine what percentage of the total numbers of white blood corpuscles had taken up carbon particles. The following table contains the results of one of the experiments:

Concentration of Iodoform Solutions in which the Effect on Phagocytosis is still Perceptible.

Fluids.	Percentage of Leucocytes having taken up Carbon.	
NaCl 0.9 per cent. (common salt solution of 0.9 per cent.)	$\frac{171}{388} \times 100 = 44.0$ $\frac{151}{345} \times 100 = 43.7$	43.8 %
1 iodoform to 100,000 NaCl 0.9 per cent.	$\frac{221}{374} \times 100 = 58.6$ $\frac{226}{377} \times 100 = 59.9$	58.2 %
1 iodoform to 500,000 NaCl 0.9 per cent.	$\frac{228}{371} \times 100 = 61.4$	61.4 %
1 iodoform to 2,000,000 NaCl 0.9 per cent.	$\frac{208}{398} \times 100 = 52.2$ $\frac{231}{445} \times 100 = 51.9$	52.0 %
1 iodoform to 5,000,000 NaCl 0.9 per cent.	$\frac{292}{621} \times 100 = 46.9$ $\frac{176}{372} \times 100 = 47.3$	47.0 %

This table shows that, in the pure salt solution, of the 388 examined leucocytes 171 have taken up carbon—that is, 44 per cent. In a parallel experiment the percentage was 43.7 per cent. Thus the average was 43.8 per cent. In the salt solution containing iodoform in a proportion 1 grain to 100,000 grains NaCl solution, the percentage in two parallel experiments was 58.6 and 59.9, average 59.2 per cent. Evidently the iodoform promoted phagocytosis.

These and other parallel experiments illustrate also the exactitude of the method. As a matter of course, control

experiments have been made in all cases. Further, it appears that a weaker solution of iodoform (1 in 500,000) yields a still higher phagocytosis (61.4 per cent.). The explanation of this phenomenon will afterwards be given. It is seen that in still weaker concentrations the phagocytosis is diminished, but even in a solution of 1 iodoform to 5,000,000 salt solution, the promoting effect of iodoform is still perceptible, for it is 47.1 per cent., whereas in a pure NaCl solution it was $\frac{1}{2}(44 + 43.7) = 43.9$ per cent.

The favouring effect of iodoform is still more evident when the leucocytes are placed for several hours in a pure NaCl solution. Then the phagocytosis falls to a considerable extent. Sometimes the phagocytes are quite paralysed. The addition of iodoform in a concentration of 1 in 5,000,000 then raises the phagocytic power by 30 per cent. or more. Thus there is no doubt that iodoform promotes phagocytosis.

Is it the iodine or the iodoform as such? We have found that iodine is noxious in a high degree. We must conclude, therefore, that iodoform as such causes the increase of the phagocytic power.

The question now suggests itself: How can the favourable effect of the iodoform be explained? It may be accepted from numerous investigations that the outer layer of the cells consists of a fatty substance, a so-called lipoid surface. Now, iodoform is soluble in fat, and it is quite obvious that such a surface will grow more soft and more flexible after having absorbed iodoform, and that consequently the plasticity and mobility will be facilitated.

If this interpretation be correct, then other substances soluble in fat, such as chloroform, chloral, alcohol, benzene, camphor, fatty acids (propionic and butyric), should affect phagocytosis in a similar way. This is found to be invariably the case.

3. *Effect of Chloroform, Alcohol, Camphor, Benzene, and other Substances Soluble in Fat on Phagocytosis.*

I shall not give an account of all our experiments made in this direction. I only give as an example an experiment with chloroform, from which one can at once get an idea as to the exactitude of the method. It was soon found that dilutions 1 in 2,000, 1 in 6,000, and also 1 in 10,000 paralysed the phagocytes. The following table contains some experiments with weaker solutions:

Effect of Chloroform on Phagocytosis.

Fluids.	Percentage of Leucocytes having taken up Carbon.
NaCl 0.9 per cent.	$\frac{174}{428} \times 100 = 40.6$ $\frac{288}{562} \times 100 = 41.2$ } 40.9%
Chloroform 1 in 20,000	$\frac{244}{480} \times 100 = 50.8$ $\frac{225}{451} \times 100 = 49.8$ } 50.3%
Chloroform 1 in 100,000	$\frac{254}{519} \times 100 = 60.6$ $\frac{382}{455} \times 100 = 60.1$ } 60.3%
Chloroform 1 in 500,000	$\frac{332}{582} \times 100 = 57.0$ $\frac{219}{370} \times 100 = 59.1$ } 58.0%
Chloroform 1 in 5,000,000	$\frac{379}{868} \times 100 = 43.6$ $\frac{298}{661} \times 100 = 45.0$ } 44.3%

From this table it appears that chloroform 1 in 20,000 raises the phagocytosis power from 40.9 per cent. to 50.3 per cent.; further, that phagocytosis is considerably increased by chloroform 1 in 100,000, in which case it rises to 60.5 per cent. Evidently in the chloroform solution 1 in 20,000 the paralysing influence also makes itself felt. In a dilution of 1 in 500,000 the favourable effect remains to about the same extent as in 1 in 100,000, and finally in a solution of 1 chloroform to 5,000,000 NaCl solution this favourable effect is still visible, though slight.

Similar results were obtained with benzene, camphor, turpentine, alcohol, chloral, fatty acids (propionic and butyric), and also Peruvian balsam. These all, without exception, promoted phagocytosis. Hence our hypothesis for explaining the effect of iodoform was fully confirmed. Another strong support to our hypothesis was obtained by comparing the concentrations of the named substances which were able to increase phagocytosis. It appeared that the relation between these concentrations corresponded with that existing between the solubility of these substances in fat.

Further, all the substances applied in very small doses showed a stimulating effect, but paralysed when given in greater quantities. This can be explained by distinguishing two factors: First, slight quantities of the substance by dissolving in the outer layer of the cell weaken it and increase the plasticity. Then, greater quantities having entered the cell, a second factor, the paralysing effect on the protoplasm, comes into play. As the amount of chloroform is increased the paralysing effect gets the upper hand, and no carbon at all is taken up.

4. *Other Phenomena seen in the Light of the Foregoing Facts.*

The effect of fat-dissolving substances on phagocytosis throws a new light on several facts which hitherto have been, for the most part, entirely unexplained. In the first place we may refer to the power of turpentine to cause local exudations, and the favourable effect of a subcutaneous injection of the same substance in the treatment of pneumonia in horses and in the mastitis of cows, which for some time has been practised with great success in France, Denmark, and Holland. Experiments made by us in this direction have shown that there is much reason to attribute this effect to very small quantities of turpentine dissolving in the lymph of tissue spaces, and afterwards entering the blood circulation and promoting the phagocytic power of the phagocytes in lung and udder.

In the same way we can explain the marked effect of camphor treatment in inflammatory processes of the uterus and its adnexa, an effect not understood hitherto. Then there is the great effect of covering wounds with balsam of Peru, the therapeutic value of inhalation of turpentine vapour in tuberculosis and other infectious processes in the respiratory organs.

In all these cases a stimulating action on the phagocytes, and probably also on other cells (granulation cells), which play a part in the healing process, may come into play.

Yet more becomes clear to us from the above researches. It is well known that various narcotics applied in small doses have a stimulating effect and paralyse in greater quantities. Engelmann observed this many years ago on ciliated cells, but he did not try to explain it. Also, as regards the nervous system, we know with regard to chloroform and ether that, when administered, they first cause excitement and afterwards insensibility. So far as we know, this contrast has never been explained, but when viewed in connexion with our experiments, the phenomenon becomes clear. In the beginning of narcosis only small quantities have entered into the nerve cells. The consequence is a softening, in the first place, of the outer layer. This weakened state of the cells produces an increase of activity (amoeboid motion?). Later, when a greater amount of the substance has been taken in, the paralysing effect gets the upper hand. With alcohol the same experience is well known.

In following this point we are led to think of the remarkable influence of a sojourn in some high mountain regions on metabolism, on sleep, and on the state of the mind. The cause is entirely unknown. It has been proved that these phenomena are not due to the height as such, for in balloons they do not occur, nor are they found in all high mountain regions, but when examining where they are observed, we find that it is in the neighbourhood of coniferous woods. So we are inclined to think that it is due to the stimulating effect of the odour of resin (turpentines, etc.) on the nerve cells.

Professor Sherrington and Miss Sowton, in their studies on the dosage of the mammalian heart by chloroform, found that, especially with greater amounts of the drug, it was usual for the first effect of the administration to be a distinct though slight increase in amplitude of the contractions. After cessation of the administration of the drug in moderate dose, it was not unusual, before the recovery, for the beat of the heart to pass over for a short time into a condition of super-activity. These phenomena suggest an irritative excitatory effect of small doses of the substance on muscle or nerve fibres (or both) of the heart.

These results agree with those previously obtained by Professor A. D. Waller in his experiments with isolated nerve.

There are experiments, also, with other organs which may be considered in the same light. Thus, Professor J. Loeb discovered that substances dissolving fat have the power of rendering possible the parthenogenetic development of eggs. Now we may imagine, with Loeb, that the substance dissolves in a lipoid of the outer layer of the egg, thus giving rise to the formation of a fertilizing membrane. We think we may safely go one step further, and assume that it is owing to the weakening of the membrane that the movement of the protoplasm underlying every cell division manifests itself. This view is confirmed by the observation of Professor R. S. Lillie, who saw also that by a short transitory raising of the temperature in the eggs of starfishes a typical fertilizing membrane may be formed, which formation is followed by the development of part of the eggs into larvae. J. Loeb was able to confirm this for Medusae.

After consideration of the foregoing facts and suggestions we were inclined to think that the stimulating effect of traces of substances which dissolve fat on the activity of cells is a widespread phenomenon. Hence we have investigated whether this influence might also be seen in *plant cells*. To do so we chose the germination of seeds, a process in which a considerable division and growth of cells manifests itself. The seeds we chose were grains of wheat, and for the fat-solvent we took chloroform. With chloroform, 1 part in 100,000, an important acceleration in the germination was observed; chloroform 1 in 1,000, on the contrary, impaired the germination, evidently because a second factor made itself felt—namely, paralysis of the protoplasm. Later I heard that in practice the growth of snowdrops is promoted by ether. In recent times Chiari succeeded in forcing blossoms to a considerable extent by ether vapour, and Mansfeld the germination of pumpkin seeds by vapour of alcohol and ether.

Hence it is clear that the observations on phagocytosis deserve our attention on general grounds as well as special. We do not at all mean to say that all substances dissolving fat have the same effect on cells of all kinds; far from it. I would emphasize that in order to be brief and to avoid complexity of detail, I have here presented the matter as somewhat simpler than it really is. Nor have all the suggestions here made towards explaining facts regarding other cells than phagocytes been actually proved. Without hypothesis science cannot progress. Fortunately we need not stay in error for long, for we can always appeal to the supreme judge—experiment.

5. *Effect of Oxygen and Carbonic Acid on Phagocytosis. Resemblance between Phagocytes and Respiratory Centre.*

In continuing these researches we asked ourselves, for a reason we shall not dwell upon here, to what extent phagocytosis depends on the oxygen percentage of the medium.

For these investigations no carbon was used, because, as we know, this substance possesses the property of absorbing gases to a considerable extent. Instead of it we made use of rice-flour. The principle for determining the degree of phagocytosis was the same as for the taking up of carbon. It was determined what percentage of the leucocytes counted had taken up starch grains after a certain time.

By this method we compared the degree of phagocytosis in a common salt solution, treated with air, with oxygen and with nitrogen. The result of these experiments was quite unexpected; it appeared that the phagocytosis is greatest where the slightest amount of oxygen was present.

Repeated repetition of the experiment when only the NaCl solutions were compared which were not treated at all and treated with nitrogen, yielded similar results.

Effect of Treatment with Nitrogen on Phagocytosis. Degree of Phagocytosis.

The fluid not treated:	The fluid treated with nitrogen:
22.9 per cent.	26.1 per cent.
23.8 ,,	33.0 ,,
23.2 ,,	27.8 ,,
20.5 ,,	31.2 ,,

It is obvious that the treatment with nitrogen has caused an increase of phagocytosis.

However, the possibility remained that the nitrogen used contained substances which had accelerated the phagocytosis. This was not very probable, since the nitrogen supplied by the company "Oxygenium" at Schiedam had been prepared by fractionated distillation of liquid air. It still contains 1 per cent. of oxygen and gases of the helium group. At any rate, it seemed desirable to carry out experiments with hydrogen likewise. These experiments all resulted invariably in phagocytosis being promoted by the action of hydrogen. Hence it may be concluded that expulsion of oxygen from the medium causes an increase of phagocytosis.

However, the expulsion of oxygen from the cells in the foregoing experiments could not have been extensive, for their contact with the fluid from which the oxygen previously was removed had lasted only half an hour. So we repeated the experiments, with this difference, that the fluid treated with nitrogen and hydrogen could act for five hours instead of half an hour on the phagocytes. In this way the cells had every opportunity to consume the greatest part of their own oxygen. The results were striking; instead of an increase always a decrease of phagocytosis occurred.*

If we submit the results obtained to a close examination we are struck by the agreement between the effect which withdrawal of oxygen has on the respiratory centre on the one hand and on the phagocytes on the other.

After the many researches on the respiratory centre we may take it for granted that besides the action of CO_2 the respiratory centre is also stimulated by a withdrawal of oxygen. The respiratory centre increases its activity when oxygen is very scarce (dyspnoea) and is paralysed when O_2 continues to be withdrawn (suffocation, asphyxia); whereas by frequent deep respiration, by which the O_2 percentage of the blood is increased, the activity of the respiratory centre is lowered in such a degree that the respiration may be stopped for some time without the animal showing any need of it (apnoea).

In view of the agreement between phagocytes and respiratory centre, the question suggests itself whether other substances have likewise the same effect on both.

Therefore we have in the first place investigated the effect of CO_2 on phagocytosis. The experiments plainly demonstrated that in weak concentrations (for instance, $3\frac{1}{2}$ volumes per cent. of CO_2 and less) carbonic acid increases the phagocytosis, and that in higher concentrations (for instance, 10 per cent.) it has a paralysing effect.

Involuntarily we are inclined to think here of the favourable effect of the therapeutic application of *venous congestion in inflammatory processes of microbial nature* (Bier). Probably the increasing of the amount of CO_2 accelerates phagocytosis. It is well known that a too energetic use of artificial venous congestion has an unfavourable effect on the inflammatory process, probably because the cells are paralysed.

Another substance having a highly stimulating effect on the respiratory centre before paralysis sets in is, as we know, potassium cyanide; a violent dyspnoea manifests itself. We found that KCN has the same effect on phagocytes—stimulating in slight doses, paralysing in somewhat greater quantities.

Now, it is all but certain that these phenomena must be connected with the property this substance has of obstructing the oxygen consumption of the cells.

6. *Explanation of the Excitement Stage in Chloroform Narcosis.*

As we have seen under heading 2, there is much evidence to justify the assumption that the stimulating effect of iodoform, chloroform, turpentine, and other fat-dissolving substances on phagocytosis must be connected with a softening of the outer layer of the cells. The present researches on the influence of O_2 withdrawal suggest the existence of a second factor.

The numerous researches of Verworn and his pupils on narcosis have established the fact that narcotics such as chloroform have the property of impeding the O_2 consumption by the cells (spinal centres, nerve fibres, amoebae, etc.). Now, it is obvious that as long as mere traces of

*We shall not give figures here; we only refer to the article in the *Proceedings* of the Royal Society of the Netherlands' meeting of Friday, April 23rd, 1915, p. 1325, and also to more extensive articles on the subject which will appear in the *Internationale Zeitschrift für physikalisch-chemische Biologie*, vol. ii.

chloroform are acting, only part of the available oxygen will be rendered useless; in other terms, the blockade of the oxygen will be incomplete, and then the phagocytes are in the case of the experiments mentioned under 5, where partial removal of oxygen by nitrogen or hydrogen causes an acceleration of the phagocytosis. This acceleration gradually passes into a retardation in proportion as the store of oxygen of the cell becomes more exhausted—an exhaustion which sets in quickly when, for instance, by the administration of larger amounts of chloroform, the oxygen consumption has fallen to a minimum or has ceased altogether.

The Excitement Stage in Chloroform Narcosis.

If we let the various narcosis theories pass in review, it appears that no one has even attempted to give an explanation of the excitement stage.

In his article "Narkose"[1] Verworn says: Für die Genese des Exzitationsstadiums fehlt bisher jede Analyse."

Our researches on phagocytosis and the agreement in the conduct of the respiratory centre and phagocytes may be useful to lighten the difficulty.

We need only to conceive that in the beginning of the narcosis, owing to a decrease in the amount of available oxygen, the sensibility of the higher nerve centres is heightened.

If the chloroform inhalation is continued, this sensibility will decrease, owing to a further decrease of the potential oxygen percentage, and finally narcosis sets in. Whether the state of complete narcosis is partly due to other factors—for instance, to a semi-coagulation of the protoplasm in the sense of Claude Bernard, or to a decrease of the dispersity of enzymes, etc.—need not be considered here. First, the higher centres, which are, as we know, very sensitive to oxygen withdrawal, are paralysed; then the spinal centres; and, after that, the respiratory centres.

We may add that in the first stage of narcosis not only the higher cortical centres and the spinal centres pass through an excitement stage; but, according to researches of Knoll and of Arloing, the respiratory centre is also in a state of heightened irritability.

Probably the increased sensitiveness as a result of a partial oxygen withdrawal must be looked upon as a general phenomenon. The sensitiveness of the vomiting centre, for instance, decreases, just like that of the respiratory centre and phagocytes, if more oxygen is supplied. Hence the inclination to vomit may be subdued to some extent by frequent and deep breathing, whilst it is stimulated by lack of oxygen.

The question which first suggests itself is the following: How is it that a decrease of the available oxygen percentage heightens the irritability of the phagocytes (and ganglion cells)?

The foregoing accounts of results and views, the fruit of some years' work with several collaborators (Hekma, De Haan, etc.),[2] being of necessity incomplete, I have attempted to select what may specially interest every medical man.

We are continuing our study of the biology of phagocytes, and each day we become more convinced of their excellence as a simple object for the study of problems of a general biochemical nature, and of some of practical interest as well.

It is a satisfaction to me that other workers have begun to cultivate this field of research and to follow our method of investigation.

REFERENCES.

[1] *Handbuch der Naturwissenschaften*, vol. vii, 1912. [2] A full account of the researches down to the year 1912 can be found in my monograph, *Physicalisch-chemische Untersuchungen über Phagozyten. Ihre Bedeutung vom allgemein biologischen und pathologischen Gesichtspunkt.* (Wiesbaden: J. F. Bergmann. 1912.) Cf. also some articles in the *Proceedings* of the Royal Society of the Netherlands (Amsterdam)

MR. CLEMENT LUCAS left property of the value of £33,487, the net personalty being £20,976.

AT a meeting of the K.k. Gesellschaft der Aerzte in Vienna, Dr. A. v. Hauer, in giving an account of eight months' experience in the field, discussed the subject of self-mutilation; soldiers with wounds of the left hand were, he said, at once interrogated with this possibility in view. Inoculation against cholera was repeated every three months; active immunization against typhoid fever and small-pox was also undertaken.

An Address

ON THE

ABSENCE OF PROPER FACILITIES FOR THE TREATMENT OF MENTAL DISORDERS IN THEIR EARLY STAGES.

DELIVERED AT A MEETING OF THE YORKSHIRE BRANCH OF THE BRITISH MEDICAL ASSOCIATION.

BY

BEDFORD PIERCE, M.D., F.R.C.P.LOND.,

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ONE hundred years ago, whilst the campaign in Belgium which ended at Waterloo was in progress, a Select Committee of the House of Commons was engaged in inquiring into the conditions of madhouses in England. Its report, presented in July, 1815, disclosed a terrible state of things, and did much to awaken the public conscience. Amongst those who gave evidence was William Tuke, the founder of the Retreat, then 83 years of age, and frequent reference is made to the *History of the Retreat*, published in 1812, which, largely owing to an article by Sidney Smith in the *Edinburgh Review*, entitled "Mad Quakers," had much influence in promoting improved treatment of the insane. Among the institutions reported upon were some spoken of in the highest terms, in particular Dr. Fox's house at Brislington near Bristol, and Dr. Finch's, Lavestock House, Salisbury, but in the main the state of affairs disclosed was horrible beyond description. One case investigated became notorious—namely, that of a man named Norris, who was restrained for fifteen years at Bethlem with a triple arrangement of bars and chains.

I do not wish, however, to discuss the abuses that existed at that time, and continued more or less for another thirty years, until the appointment of the Lunacy Commission finally put an end in this country to the era of straw and chains in the treatment of the insane.

My object in referring to the report of 1815 is to point out that, in spite of the grave condition of public affairs caused by Napoleon's escape from Elba and his success in raising an army of 250,000 men in less than three months, a committee of the English House of Commons week after week calmly listened to evidence dealing with the management of madhouses. The nation is again passing through a serious crisis in its history, but unless the British character during the past century has seriously altered, it will not be long before the country will be willing to give attention to social questions. To refer to a subject which involves the expenditure of public money at the present time would seem futile, yet it did not discourage our ancestors, exhausted and almost ruined by the Napoleonic wars. On the Friday before the battle of Waterloo the Select Committee considered designs for the construction of two asylums in London and Yorkshire respectively, estimated to cost together £36,596.

The lull of political controversy would seem to afford a singularly opportune time for considering whether any alteration in the law is required in the interests of persons threatened with mental disease. I therefore do not hesitate in bringing to your notice a subject which I believe to be of great importance—namely, the absence of proper facilities for treatment of nervous and mental disorders in their early stages. Its importance was long ago realized by the British Medical Association, which, with the Medico-Psychological Association and the Medico-Legal Society, repeatedly advocated a change in the law. Immediately before the outbreak of the war the Medico-Psychological Association adopted the report of a special committee advocating the establishment of clinics for the treatment of early cases. In the medical press recently the subject has again been discussed, and general public attention was called to the matter, when it was realized that, apart from certification, there was no legal method of treating soldiers temporarily disordered in mind. It was at once seen that the existing procedure was impossible for men temporarily broken down in the service of their country, yet a bill introduced into Parliament to meet the case failed to pass. Although the difficulty in respect to soldiers has to a large

extent been overcome, I would urge the British Medical Association to consider afresh whether some radical change in our procedure cannot be secured, so that all on the verge of mental collapse, as well as those whose breakdown is recent and may be considered temporary, can receive effective treatment in a properly equipped hospital without the necessity for certificates of insanity.

Let me state in a few words the defects of our present system. At present, broadly speaking, no person unable to pay its cost can receive adequate treatment until he is certified as of unsound mind. This practically means that no special treatment is possible until he has utterly broken down and is so seriously affected as to convince a magistrate that he is decidedly insane. No general hospital will receive such a patient; the public asylums are all closed to any one who begs for protection or treatment, for county asylums cannot receive voluntary boarders even when the cost of their maintenance is forthcoming.

Consequently there is no alternative but to apply to the Poor Law authorities, who, under certain circumstances, provide treatment for a period of two weeks in the workhouse infirmary. The whole system is radically wrong. When the wife of an artizan becomes depressed after confinement, surely it is cruel in the extreme to make her a pauper and send her to the workhouse infirmary, pending a decision as to whether she is insane or no. It is obvious in such a case that this course will not be adopted until the last possible moment, and consequently much valuable time is lost.

Every practitioner will be able to call to mind patients travelling steadily towards insanity in unfavourable surroundings. This question is brought even more prominently before consulting physicians, especially those interested in nervous and mental diseases.

Dr. Henry Maudsley's generous gift of £30,000 to the London County Council to establish a hospital for recent and undeveloped cases shows most plainly how the matter appears to one of the foremost thinkers of the day and a physician who has spent his life in the study of mental disorders. Dr. Maudsley's books are already classics, they are quoted, consciously or unconsciously, by all who have written on the subject of insanity in recent years, and it was a noble act on his part to assist in meeting the crying need of those threatened with or struggling against mental infirmity. As I write the hospital is nearly ready, but owing to the exigencies of the war it is, for the present, I understand, to be used exclusively for soldiers.

If it were possible, instead of a separate hospital it might have been better to establish separate pavilions for nervous and mental diseases in direct association with general hospitals. At La Charité hospital in Berlin the visitor enters a small park, and Dr. Zichen's clinic is but one of many detached buildings devoted to special diseases. It is as easy and simple for the patient suffering in mind to get advice there as for another with eye or with lung trouble. In most cities in England, however, any such arrangement is impossible, for general hospitals cannot be rebuilt or reconstituted in this way.

In order to give some idea of the extremely valuable work done at special hospitals of the kind advocated, I will briefly allude to the Psychopathic Hospital at Boston, Massachusetts. I have before me the notes of the first and the second annual conferences of the medical and social work at this hospital.[1] The hospital was built by the State expressly to deal with recent acute cases. No fewer than 1,523 patients were received in its first year, and of these 590 were received under a temporary care law which provides for a week's detention only; large numbers were also received on a voluntary basis, so that during the year 48 per cent. of all patients escaped the usual lunacy procedure.

On reading the reports of work done, one is struck with the enthusiasm of the medical staff and the vast field of research undertaken. During the two years eighteen medical men describe their work covering almost every department of psychiatry: Juvenile crime, tests for feeble-mindedness, incidence of syphilis, alcoholism, hydropathy in its influence on red blood cells, treatment of delirium, prophylaxis, analysis of genetic factors, salvarsan treatment, tests of cerebro-spinal fluid, errors in diagnosis, and last, but not least, the value of out-patients' departments and after-care. There is a special social service department for the purpose of following up cases in their homes, and it was found that of every 100 admissions 20 needed supervision on discharge, 24 needed advice, 3 required assistance in arranging their discharge, and 10 showed a need for prophylactic work in their families.

This bald statement of the activities of the Boston State Hospital shows plainly what an important service it renders in providing treatment apart from ordinary asylum associations. It shows how it is possible at such a hospital to organize a medical service which covers all departments of psychiatry; and, further, that when the mental symptoms clear up, a patient need not be thrown back into old associations without help or supervision.

This hospital at Boston is but one of many that have been established in the United States in recent years. Some of the others are due to private munificence; in particular, reference may be made to the Henry Phipps Psychiatric Clinic at Baltimore, the medical staff of which consists of a director, assistant director, a resident physician, two assistants, and five internes. In addition to these are the heads of three research laboratories, dealing (1) with clinical pathology and bio-chemical investigation, (2) with neurological research, and (3) with psycho-pathology.

It would give a wrong impression to conclude that nothing whatever has been done in this country, seeing that the city of Glasgow has provided excellent hospital accommodation for the temporary care of doubtful and recent cases in association with the Poor Law infirmaries; and in London, Liverpool, and elsewhere the hospitals under the control of the guardians are well equipped and very efficient institutions. I think, however, that I am justified in stating that even in these localities the facilities fall far short of what is really needed, whilst the medical staff is relatively very small. Besides this the association with the Poor Law is a serious drawback. In the words of the report of the Medico-Psychological Association:

> The present system, which compels all persons, except those able to pay adequately for their maintenance, to apply to the Poor Law authorities in order to secure treatment, is unsatisfactory and unjust. In doubtful and undeveloped cases temporary care can be given only in workhouses or Poor Law infirmaries, which, with very few exceptions, lack proper facilities for treatment.
>
> A system which artificially creates paupers in order to obtain medical treatment necessarily acts as a deterrent, so that too frequently there is serious and even disastrous delay.

There is, however, one hospital specially devoted to the care of mental and nervous diseases free from these objections, though I fear the small financial support it receives greatly limits its usefulness. This pioneer institution is the Lady Chichester Hospital, Hove, Brighton, for cases of nervous breakdown, established chiefly through the efforts of Dr. Helen Boyle. In a small way it represents the ideal, as it is affiliated with a hospital for medical and surgical cases, and it is free from Poor Law associations. From the annual report I extract the following, referring to the patients admitted:

> Many such are entirely dependent upon their own exertions, and the knowledge that no refuge existed for them would render them a more easy prey to disease. Others are wives and mothers of families whose circumstances make it impossible for them to get rest or relief so long as they remain in their own homes. The only chance is to take them away from the daily strain and constant succession of unavoidable worries. Failing this they may only too easily cross the narrow line which divides the borderland case from that which is actually certifiable as mental. At present this is the only hospital in the United Kingdom which deals with such cases of early nervous breakdown in poor people; it has therefore the strongest claim possible to the support of those who realize the danger and the expense to the community entailed by failure to give help soon enough. It is needless to say that the 33 beds provided in this hospital are wholly insufficient to meet the demands, patients having to wait months for admission sometimes, and it cannot be too often repeated that treatment of this kind is one of the most pressing requirements of the present time.

The value of special hospitals for nervous and mental disorders has been demonstrated in a remarkable manner by the conversion of the State Hospital, recently equipped by the Board of Control under the superintendence of Dr. Rees Thomas, into a Red Cross hospital for soldiers suffering from shock and other psychoses. It is singularly fitting that the organization and management of this hospital since Dr. Thomas left for active service should fall upon Dr., now Major, Rows, who perhaps more than

any other person has laboured for the establishment of clinics and special hospitals of this kind.

The Moss Side Hospital, Maghull, accommodates some 280 patients housed in six pavilions. They suffer from all kinds of nervous maladies arising in the course of active service. Two-thirds of the patients are nursed entirely by women nurses. As the patients are soldiers, and have been drafted from Netley in the ordinary way, no difficulties arise as to legal status.

It is satisfactory to find that the medical staff is relatively strong, exceeding that of almost any similar institution. For the 280 patients there are seven whole-time medical officers, most of whom are men with great experience in this department of medicine. This is not the place to refer to the enthusiastic work of these gentlemen; no doubt in due course reports will be published. Yet I may be permitted to say that a recent visit to this hospital yielded me great satisfaction in two directions. First, that our soldiers shaken or disturbed in mind in the course of their duty are receiving the best and most skilful treatment that modern psychiatry can provide; and secondly, that a hospital already is in being which illustrates what might and should be done throughout the country for those threatened with mental failure and on the verge of insanity.

When we consider the problem of securing effective treatment for those in a position to pay for it the difficulties are not greatly reduced. No doubt patients whose conduct is not disorderly and who are not actively dangerous to themselves and others can obtain treatment in a number of different ways. Nursing homes, private lodgings, doctors' houses, special arrangements in their own homes, hydropathics, are open to them, as well as foreign travel and health resorts of all kinds. All these are of value in certain cases, but it will be generally admitted that there is a large residuum of cases which cannot be nursed to the best advantage outside a special hospital. Under the existing state of the law only institutions available are the recognized institutions for the insane, and these are not considered until almost everything else has been tried. It is consequently not far wrong to assert that the richer the patient the less likely is treatment in a special hospital to be adopted early in the course of the malady. Two deeply rooted prejudices cannot be ignored. There is, firstly, the dread of asylums and of any association with the insane, and, secondly, the objection to certificates. It is useless to say that these prejudices are due to ignorance, and need not be seriously considered, for they are strongly entrenched in all grades of society, medical practitioners and others with personal knowledge of the subject not exempted. This dread does not seem to arise merely from the thought that insanity brings a stigma upon a family through the disclosure of hereditary weakness, although no doubt the incidence of insanity is feared from this point of view. Nor do I think that it is due to an idea that mental disorder is specially terrible owing to the possibility that the higher and nobler qualities of mankind may be lost. I have met persons otherwise level-headed who cannot be persuaded to enter the grounds of an asylum. Not infrequently all sorts of excuses are made to escape the duty of visiting a relative who is under care, and so real is the danger of neglect that the State has decreed that no order for reception shall be granted without an undertaking that the patient shall be visited at least every six months.

It seems clear to me that these prejudices are independent of any reasoned explanation and are due to traditional beliefs. That our lives are greatly influenced by these is not open to doubt. Superstitious notions are implanted in our minds from our earliest years. Old wives' tales are repeated by servants and casual visitors, and are eagerly listened to by the young, and it takes many years to destroy their influence, and, indeed, in many of us beliefs so acquired form a permanent part of our mental furniture. The origin of many such notions may be lost entirely, but I think in the present case these prejudices about insanity are directly descended from mediaeval beliefs about evil spirits and demoniacal possession. The thought that madness is due to a possession is, moreover, strengthened by the way in which Scripture is taught. "He hath a devil and is mad" indicates plainly the current view of insanity at the beginning of the Christian era, which view exists to this day in the East and has certainly not died out in our own country. I would therefore suggest that the unreasoning prejudice against the insane, the supposed stigma that attaches to insanity, really at bottom depends upon a survival of the superstition that mental disease is due to evil spirits. In other words, there is thought to be something uncanny, mysterious, and supernatural about disorders of the mind, and this gives rise to unreasoning dread of any association with insane persons.

I know of no remedy for these erroneous and cruel views but the gradual enlightenment of the public. I incline to think our asylums and hospitals are too much cut off from the world at large, and that too little is known of their patients and their doings.

Unfortunately the general practitioner is generally not in a position to assist in this enlightenment. Very few of them have lived in asylums, and the teaching of medical students is hardly calculated to give them much knowledge of the insane, though they may learn something of insanity. The situation is aggravated by asylum practice being divorced from general medicine to a large extent, and it is quite common for an experienced medical man to say without apology that he knows nothing whatever about lunacy. When the special hospitals already referred to are established we may confidently assume that they will become centres of education in all matters relating to insanity, and at the same time provide vastly better facilities for the instruction of medical students than exist at present.

Apart from the prejudices in relation to asylums, we must not forget that there is a widespread belief that association with other patients is itself injurious. No doubt there are some patients who do better in single care under domestic surroundings away from doctors and nurses and other patients, and it is quite true that in the best arranged institutions an observant and sensitive patient cannot but see much that is painful; nevertheless, I have never found any real hurt from this, and sometimes it is positively helpful to find that others are suffering in a similar way. Experience shows quite clearly that the association of patients is, broadly speaking, helpful rather than the reverse, so long as the size or the resources of the institution admit of satisfactory classification.

The other prejudice, the objection to certificates, is in many cases not without justification. I do not wish to defend those who resent certificates because they state an unpleasant and unwelcome truth, and who would close their eyes to the facts of the case. Such persons fail to see the immense value of the lunacy laws, and that to conceal the existence of insanity is to deprive persons unable to look after themselves of the protection of the King or the representatives of the Crown.

I therefore admit at once that persons who break down mentally cannot be treated in exactly the same way as those suffering from an ordinary ailment. Indeed, I am not sure that the law is strict enough in reference to established insanity, seeing that so many persons are treated privately without proper supervision. However this may be, it seems to be unjust in the extreme that persons with ill-defined or very temporary attacks of mental disorder should be unable to obtain effective treatment without being certified as of unsound mind.

Voluntary treatment can, it is true, be obtained in hospitals and licensed houses, and this is of the utmost value in many cases, and should be possible in all asylums. Yet experience shows that treatment on this basis is insufficient, for the reason that many patients most needing temporary care are unable to decide for themselves what treatment should be adopted.

Let me briefly illustrate the difficulties. Some years ago the managing director of a flourishing business was attacked by melancholia, and tried to throw himself out of a train. He was certified and sent to a hospital for the insane, but recovered in a week. On his discharge at the end of a month he found that another had been appointed to his post, and to this no exception could be taken, as the articles of association of his company contained the usual clause that a director who becomes insane is at once disqualified. Again, a medical man in large practice suddenly became seriously depressed with delusions of persecution. It was clear that special care was imperative, and he was certified and sent to a licensed house, where he recovered very quickly. In default of

any other procedure nothing else could have been done, and yet I could not but sympathize with his conviction that such a step ought to have been avoided.

Certificates are also objected to on account of the attendant disturbance of business affairs. A professional man holding several appointments suddenly lost his memory of recent events, although retaining his general intelligence. His affairs were managed by his son, who was his partner, to the satisfaction of every one. Unfortunately, as so frequently happens, the old gentleman became restless at night, and care in an institution was advised. He was quite willing to go away voluntarily, but owing to his defective memory he could hardly remain as a voluntary patient, not being able to remember his position. When certificates were proposed it transpired that they would mean a loss of £400 a year, as his appointments would have to be given up; and, moreover, the power of attorney given to his son would become invalid, so that his whole business affairs would be disorganized. In such a case in all probability a receiver would soon become necessary; yet it seems altogether wrong that such a man should at once be exposed to these disabilities when he breaks down mentally, seeing that he might be away from business for six months, and incapacitated in body and mind, by typhoid fever without any difficulties of this kind.

I have not forgotten a favourite legal maxim, "Hard cases make bad law"—an excuse for injustice which is not very convincing. But the difficulties I have mentioned are not exceptional. It is no exaggeration to say that in at least one quarter of the cases I see in consultation the impossibility of securing effective temporary care, apart from certificates, is a serious matter. One of my case-books contains 239 consecutive cases seen in consultation, and of these 79, or 33 per cent., needed the special care referred to. In a recent acute case it is obviously desirable that asylum care should not be hastily undertaken, and indeed it is only fair to the patient that it should be delayed until the real nature of the case can be made out, and yet at present for rich and poor alike there are no properly equipped homes or sanatoriums where treatment can be given temporarily under favourable conditions.

Directly we begin to consider the possibility of establishing any such hospital we are beset with difficulties. The hospital which I picture in my mind is affiliated to the general hospital of the district; it has a large garden, in which are several pavilions. There is both a resident and a non-resident medical staff, which collectively is able to attack mental disease from all sides. The patients would for the most part be received on a voluntary basis, though, if needful, detention for defined periods would be possible, whilst the equipment would include all appliances likely to assist in diagnosis and treatment.

Such public hospitals would usually, as in Boston and Munich, be municipal institutions, and in the long run they would prove to be a good investment of public money, owing to the large amount of insanity they would prevent.

The establishment of similar institutions for paying patients presents even greater difficulties, unless there is some change in the law. In existing circumstances there would be constant risk of prosecution under the 315th Section of the Lunacy Act, as it would be impossible to prevent patients stepping over the border, and the utility of such a home or sanatorium would be lost if such persons could not temporarily be detained. Hitherto proposals to enlarge existing powers of compulsory detention have been viewed with suspicion by a large section of the public, and several bills designed to meet these difficulties have been rejected by Parliament.

The legal profession views with grave concern any interference with the liberty of the subject, although a lawyer friend of mine, in discussing this matter in relation to the present state of public affairs, cynically remarked that "if there are any liberties left in England, now's the time to remove them."

This problem will not be solved until it is clearly recognized that there is no defined line between sanity and insanity, but rather a vague intermediate zone, and that those who enter this region urgently need the best possible treatment. I would therefore plead for legal recognition of this intermediate borderland state, and, as some power of detention in certain cases is required, safeguards must be provided that will disarm criticism.

The greatest of all safeguards is the absence of any concealment, and at once we find that in this matter public and private interests clash. It is only reasonable that families should not wish the state of an afflicted member to be generally known, and patients temporarily suffering from mania, or indeed any form of insanity, are entitled to privacy. Consequently the wards of the psychiatric hospital cannot be open to the public in quite the same way as those of a general hospital.

The suggestion has been made that the law should recognize a new class of patient suffering from undeveloped insanity, who under certain conditions might be detained for a stated period. How long this should be is a matter for discussion; probably a month in the first place would be sufficient, to be extended with the approval of the supervising authority for a further period of not more than five months. The names of all such patients would doubtless be notified to the Board of Control, and they might be styled "notified" patients, as distinct from voluntary boarders on the one hand and certified patients on the other.

Keeping in view the chief safeguard—absence of concealment—I would suggest that periodic reports of every case should be sent to the Board of Control, and that it should be obligatory to keep records for inspection by visiting members of the Board. I see no reason why the correspondence of "notified" patients should be interfered with. Further, no patient should be detained under this provision except in homes or institutions approved by the Board of Control.

All such approved homes should be inspected regularly by visitors nominated by the Board of Control, or possibly by county councils; if these visitors reported unfavourably in any individual case, the patient would have to be discharged or certified.

I see, moreover, no reason why notified patients should not be received in any recognized institution of the insane, or into special departments of such which the Board of Control might consider suitable for the purpose.

This amendment of the law would prevent evasion and the illegal detention of patients in lodgings or in private care that is now notorious. What has been termed the "back-parlour treatment" of the insane would be abandoned as far as recent incipient cases are concerned, and it is these that are of the most consequence. Special hospitals, such as the Maudsley Hospital, and psychiatric clinics generally, would be able to treat to recovery a large number of patients who must now be certified.

These two recommendations—the establishment of special hospitals or sanatoriums for the treatment of medical disorders in their early stages, and the modification of the law required to render such treatment effective—are, in my opinion, matters of the utmost importance. Not only will they do much to prevent declared insanity, but these special hospitals will become centres of enlightenment, and so disperse the unhappy prejudices and errors that surround the subject, whilst the larger clinics associated with universities will afford students opportunities of studying practical psychiatry which they do not now possess.

REFERENCE.
[1] *Boston Medical and Surgical Journal*, September, 1913.

PERIPHERAL SHOCK AND ITS CENTRAL EFFECTS.

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THE admirable paper in the BRITISH MEDICAL JOURNAL of December 11th, 1915, by Dr. F. W. Mott, on "The psychic mechanism of the voice in relation to the emotions," reminds me of a remarkable case of deaf-mutism which came under my observation some years ago. This condition existed in a collier for about seven years, consequent upon receiving a "shock" in an underground colliery explosion. He was eventually cured by another shock during a second colliery explosion underground; he regretted that he never recovered the power of singing, as he had belonged to a choir before the first accident, and was incapable of rejoining it on that account, although he still enjoyed listening to music.

After his recovery this patient came to a surgical ward

at the Cardiff Infirmary, and it was through the accident of my going into the ward during visiting hours and seeing him converse with his wife in the deaf-and-dumb language that I obtained his singular history.

He was one of the few survivors in a big colliery explosion. He remembered nothing of the accident, but on recovering consciousness found that he could neither hear a sound nor articulate a word. After remaining in this condition for a considerable time he went to a school for the deaf and dumb, and eventually married a congenital deaf-mute. He lived happily in this state for some years, and resumed work until the occurrence of a second underground explosion, which was followed by his recovery from deaf-mutism; he stated that he distinctly remembered "hearing the ground tremble" before lapsing into unconsciousness which lasted a few days. When he regained consciousness he got very excited upon discovering that his powers of speech and hearing had returned. The late Dr. Naunton Davies, J.P., of Porth, told me that he knew the man well, and that in his opinion there was a strong hysterical strain in him; Dr. Davies said also that there was no evidence of direct injury to the head.

The present war has added to our knowledge of the causation of symptoms which are clinically so well known, and are described in the textbooks in chapters on concussion of the brain. It is no longer necessary to assume that "*commotio cerebri*" must have taken place, due either to a direct force—a "whack" or "crack" on the head—or to indirect force transmitted through the atlantoid articulations with the occiput producing a jarring of the skull and its contents. It can now be easily realized by those who have seen and studied the effect of high explosive shells upon the buildings of a town or village in the vicinity of which explosions have taken place. The damage which *atmospheric disturbances* alone can do to buildings, even at great distances from the site of the explosion, has strikingly illustrated the effect such air currents must have upon human beings, whether standing or lying down, awake or asleep. To me the damage done to buildings carries the conviction that the general shock to the whole surfaces of skin and mucous membrane which protect the exterior of man may be sufficient to disturb the nervous machinery to a degree which may vary from slight symptoms of concussion of the brain by stages which may reach the extremity of sudden death, without showing evidence of any appreciable naked-eye pathological signs.

I have had the opportunity of seeing the effect of air disturbances caused by colliery explosions, and these are in some aspects as powerful as those of "shell concussion." Further, I am of opinion that many of the freaks of lightning can be best explained upon the hypothesis that the tracks of lightning sparks cause sudden violent air currents, in the nature of vortices, ripples, or waves. These air blasts are often of a weirdly powerful intensity; the most striking example that has come under my own observation since I recorded—at the Oxford Meeting of the British Medical Association in 1902—the cases of two men struck by lightning, was one in which a key that had not been turned on the inside of a door was driven right across a room several feet high, marking by its impact the wall against which it struck; at the same time the beading on the exterior of one of the door-boards was stripped off and carried in an opposite direction to that taken by the key. I do not wish to weary the reader by quoting further illustrations of the effects of lightning air-currents in splitting dry wood or in blowing bark off dead trees. I want merely to emphasize the fact that in a large number of cases violent air-currents striking against skin and mucous membranes, whether originating in war by high explosives, or in civil life by colliery explosions, and by lightning, play *per se* the principal part in the etiological factors which cause disturbances of function in the psychic, physiological, and automatic centres situated in the brain itself through impulses conveyed to it. The special intermediate organs existing between the exterior of man and his brain, such as the eyes and ears, are frequently put out of gear by these air-currents or "shell concussion," and Mr. Jameson Evans, in the number of the BRITISH MEDICAL JOURNAL referred to above, gave some striking illustrations of such damage to vision. On the other hand, cases of severe labyrinthine trouble of the ears have been found to exist after patients recover from the unconsciousness of severe concussion of the brain, as exemplified by the experiences of a young man who was "blown up" at Loos, and discovered that he could not direct himself to getting out of the side of the bed he wanted to, and that when he did get out he found himself staggering and reeling; these symptoms disappeared in two or three days, leaving in the course of a few weeks only partial deafness of one ear.

It will be noticed in the history of the case of deaf-mutism in a collier related above that he suffered from *two types* of shock—or symptoms of concussion of the brain—the first one occurring suddenly or instantaneously, that is, without consciousness of the accident on his part; whilst the second one had a latent period, that is, consciousness of the action before he lapsed into unconsciousness. I have observed the same two types of shock in cases of lightning stroke.

It is manifest that it is only in the type of "shell shock" in which a latent period occurs before the onset of the state of unconsciousness that the psychic centres can exert any influence upon the nervous machinery of the emotions.

The grim reality of the misnomer, "hysterical manifestations in a neurotic," is dramatically portrayed in the case related above, where the collier, upon recovering his power of speech and hearing, found himself married to a congenital deaf-mute!

OBSERVATIONS ON CASTELLANI'S "TETRAVACCINE" AND "PENTAVACCINE."

BY

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To Castellani is due the credit of having first proposed, prepared, and used, combined vaccines. The preparation of such vaccines is based on the experimental work he carried out in 1901–1902, when he was able to demonstrate that an animal (rabbit) inoculated with more than one species of bacteria, within limits, elaborated agglutinins and immune bodies for the various species injected, and that the amount of such protective substances for each species was not distinctly less than in control animals inoculated with one species only.

Castellani's best-known mixed vaccines are the tetravaccine "typhoid + paratyphoid A + paratyphoid B," which he began using in man on a large scale in 1905; the tetravaccine "typhoid + paratyphoid A + paratyphoid B + cholera"; the tetravaccine "typhoid + paratyphoid A + paratyphoid B + Malta fever"; the pentavaccine "typhoid + paratyphoid A + paratyphoid B + cholera + plague."

It may be of interest to put on record the experience I have had in Serbia of two of Castellani's vaccines—namely, the tetravaccine, typhoid + paratyphoid A + paratyphoid B + cholera; and the pentavaccine typhoid + paratyphoid A + paratyphoid B + cholera + Malta fever.

The two vaccines were obtained from Dr. Castellani, who was preparing them in Serbia on a large scale for the American Red Cross Sanitary Commission and for the Serbian army. The details of technique for the preparation of such vaccines may be found in his own publications; I limit myself to stating the results I have had.

Tetravaccine.

The tetravaccine was used by me to inoculate 3,000 persons, most of whom I was able to follow for two months after inoculation. Two injections only were given (½ c.cm. each) at an interval of five to seven days. The injection was done subcutaneously in the arm, after sterilizing the skin by means of tincture of iodine. The local reaction was generally mild, a few hours after injection a small patch of redness developing, with slight pain, which lasted one to two days. The general reaction was also, as a rule, mild. All the inoculated persons were able to attend to their duties twenty-four to forty-eight hours after the injection. I was able to keep in touch for two months with 2,000 of the inoculated persons; no case of typhoid, paratyphoid A, paratyphoid B, or cholera developed among them. With the kind assistance of Dr. Castellani, I

examined the blood of four of the inoculated persons. I have collected the results in the following table:

Tetravaccine.

Individuals Inoculated.	Blood tested against	Limits of Agglutination. Weeks after First Injection.				
		1	2	3	4	5
No. 1. ...	*B. typhosus*	1/40	1/1200	1/500	—	1/200
	B. paratyphosus A ...	1/20	1/400	1/200	—	1/100
	B. paratyphosus B ...	1/20	1/300	1/200	—	1/100
	V. cholerae	1/20	1/100	1/80	—	1/60
No. 2. ...	*B. typhosus*	1/20	1/1200	1/400	1/300	1/200
	B. paratyphosus A ...	1/20	1/200	1/150	1/150	1/100
	B. paratyphosus B ...	1/20	1/200	1/200	1/150	1/100
	V. cholerae	1/20	1/60	1/40	1/40	1/40
No. 3. ...	*B. typhosus*	1/40	1/600	1/600	1/300	1/200
	B. paratyphosus A ...	1/20	1/500	1/400	1/200	1/150
	B. paratyphosus B ...	1/20	1/500	1/400	1/150	1/150
	V. cholerae	1/10	1/60	1/100	1/40	1/40

Comparing the results collected in the above table with the results obtained in control individuals inoculated with monovaccines by Dr. Castellani and Dr. Mendelson, I find that the amount of agglutinins present is not distinctly smaller.

Pentavaccine.

The pentavaccine I used was the typhoid + paratyphoid A + paratyphoid B + cholera + Malta fever. I obtained it from Dr. Castellani. As regards the technical preparation of this vaccine I refer the reader to Dr. Castellani's own publications. I inoculated with this vaccine 2,000 individuals, mostly at the inoculating department attached to the Uskub American Clinic, with no untoward accident of any kind. The injections were given (½ c.cm. each) at an interval of five to eight days, with the usual technique. The reaction, local and general, was not more severe than in individuals inoculated with the tetravaccine. The blood of two of the inoculated persons was examined with the kind assistance of Mr. D. de Silva.

The results are given in the following table.

Pentavaccine.

Individuals Inoculated.	Blood tested against	Limits of Agglutination. Weeks after First Injection.				
		1	2	3	4	5
No. 1. ...	*B. typhosus*	1/40	1/800	1/500	1/300	1/150
	B. paratyphosus A ...	1/20	1/400	1/300	1/200	1/150
	B. paratyphosus B ...	1/20	1/400	1/400	1/200	1/200
	V. cholerae	1/10	1/60	1/40	1/40	1/40
	M. melitensis... ...	—	1/40	1/80	1/80	1/20
No. 2. ...	*B. typhosus*	1/20	1/1200	1/400	1/250	1/200
	B. paratyphosus A ...	1/20	1/500	1/400	1/300	1/200
	B. paratyphosus B ...	1/20	1/500	1/300	1/300	1/150
	V. cholerae	1/20	1/100	1/80	1/40	1/40
	M. melitensis... ...	1/10	1/40	1/200	1/150	1/80

CONCLUSIONS.

The use of Castellani's tetravaccine, typhoid + paratyphoid A + paratyphoid B + cholera, is harmless, and the inoculated persons develop protective substances for the four diseases. My results are therefore identical to those obtained by Castellani, Mendelson, and Randon, who have used that vaccine on a very large scale.

The use of the pentavaccine, typhoid + paratyphoid A + paratyphoid B + cholera + Malta fever, is also harmless, and, according to my experiments, the inoculated persons develop protective bodies for the five diseases. In my opinion, these mixed vaccines should be used as a matter of routine in all countries where such diseases exist already or may be easily imported.

BIBLIOGRAPHY.

Castellani: *Zeit. f. Hygiene*, 1902; *Centr. für Bakt.*, 1905; BRITISH MEDICAL JOURNAL, 1913, 1914, 1915; *Sperimentale*, 1915.

Castellani and Mendelson: BRITISH MEDICAL JOURNAL, November 13th, 1915.

DR. HENRY MACDONALD CHURCH, Demonstrator of Anatomy in the University of Edinburgh, left personal estate in the United Kingdom valued at £17,400.

REPORT OF A CASE OF SEVERE TETANUS SUCCESSFULLY TREATED BY ANTITOXIN.

BY

T. P. KILNER, CAPTAIN R.A.M.C.(T.F.).

THOUGH the following report was written in the earlier months of the war, when tetanus was much more commonly seen than it is now, it still may be justified in its publication in that it may give some little guidance to those who are called upon to treat the cases of a similar type which still occasionally appear.

At the time of writing much discussion was in progress around the whole subject of tetanus and its treatment, but the views and suggestions put forward were so numerous and so extremely varied that it was quite obvious that no very definite "best" line of treatment had been found.

Up to the commencement of the war reported cases in England were comparatively few, and even in America, where statistics of antitoxin treatment are particularly abundant, detailed reports are scarce, so that one is unable to get clear ideas of the severity of a particular case, the doses of antitoxin required, and the precise nature of the effects of the treatment on the patient.

It would seem, however, that insufficient patience and perseverance are exercised in many cases, and that one settles down too easily to the conclusion that all cases with a short incubation period are hopeless from the onset—a statement certainly borne out by a report in the BRITISH MEDICAL JOURNAL about the time of writing, which said: "The result (death) seems to agree with what was already fairly generally recognized—namely, that if the disease has an incubation period of less than twelve days it is fatal in spite of treatment, whether by antitoxin or other means."

A private, aged 31 years, was admitted to the Manchester Royal Infirmary in the early morning of October 31st, 1914. He gave a history of having been wounded at Ypres at 8 a.m. on October 27th by the explosion of a shrapnel shell, and on examination was found to have a large suppurating crateriform wound, extremely foul-smelling, occupying a position on the inner side of the right leg immediately below the knee-joint. A small punctured wound was also present on the anterior aspect of the joint, but the two had apparently no connexion, and the joint itself was not opened.

He stated that after receiving his wounds he had to drag himself, his leg trailing along the ground, for a distance of about fifty yards before reaching cover, and that it was not until 8 p.m. that the wound received its first dressing. He had lost large quantities of blood, and was very anaemic and toxaemic looking when he arrived in hospital, four days after the injury. The wound was dressed with boracic fomentations every four hours, and irrigated frequently with hydrogen peroxide solution. The cavity involved the upper end of the tibia, and from time to time fragments of necrosed cancellous bone were removed.

The wound cleared up somewhat, but the question of amputation was under consideration on account of the bad general condition of the patient and the obvious impossibility of preserving a useful limb, when at 9.30 on the morning of November 5th, nine days after the injury, rigidity of the masseters was first noticed, the patient complaining of a sore throat and being found unable to open his mouth for inspection.

Previous to this, one had been on the outlook for signs of tetanus, for the patient had shown those profuse sweats which are apparently frequently the precursors of the condition, and which had been particularly marked on the previous evening.

The trismus increased rapidly and spread to the muscles of the neck and abdomen. Perspiration was profuse, so that the bed linen was soaked. At noon of the same day the leg was amputated at the middle of the thigh, partly with a view to removing the focus of infection and partly because hopes of preserving the leg were obviously small. At the time of operation about 1,000 units of antitoxin were injected into the spinal theca, and a further 2,000 units given subcutaneously. At 6 p.m. the patient had recovered from the anaesthetic, but was still very rigid about the head and neck.

The abdominal muscles were also tightly contracted, and there had been some clonic contraction of the arm muscles associated with stertorous breathing. A second anaesthetic was administered, and 4,500 units of antitoxin were injected spinally and 9,000 units given subcutaneously in the abdominal wall. Two teeth were extracted at the same time in order to facilitate the anticipated difficulty in feeding. The foot of the bed was raised and the room kept as quiet as possible.

At 1 a.m. of the following day 6 oz. of chloretone in olive oil were administered by the rectum for the continued clonic contractions of the arm muscles. Potassium bromide and chloral (āā gr. xx) were then given by the mouth at intervals of four hours. At 4 p.m. a further 15,000 units of antitoxin was given subcutaneously.

Active treatment was now temporarily suspended. The patient was fed on fluids, of which he managed to take large quantities without resort to tube feeding being necessary. His condition gradually improved, but the inability to open the mouth persisted until November 15th. A little previous to this it had been noted that the spasm relaxed slightly during sleep. On November 16th the patient took solid food for the first time. On November 17th he was given a further 15,000 units of antitoxin, 4,500 being administered spinally, 10,500 subcutaneously.

It should be noted that on each occasion when serum was given the patient's condition became temporarily much worse, there being marked increase in rapidity of the pulse and considerable rise of temperature. During the last spinal injection it is interesting to note that the patient experienced painful numbness and tingling in the amputation stump which by this time was practically healed.

Gradually the patient resumed the normal state of health—there was no return of muscular spasm, and we were able to transfer him to a convalescent hospital very shortly; there, according to later reports, he made an excellent recovery.

The points to which I would draw particular attention are:

1. Recovery in spite of well-marked symptoms and a short incubation period (nine days).
2. The large doses of serum administered, 46,500 units in all.
3. The very slow and gradual relaxation of spasm.

I am indebted to Captain E. D. Telford, F.R.C.S., R.A.M.C.(T.), in whose wards the patient was treated, and to whom I was acting as house-surgeon at the time, for permission to publish these notes.

SEROLOGICAL TESTS IN DYSENTERY CONVALESCENTS.

BY

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AND

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In a previous paper[1] we have explained that the subacute cases of dysentery which have been admitted here have all been due to infection by *B. dysenteriae* Shiga, this organism having been recovered from the dysenteric dejecta. Since that paper was published three further subacute cases have been found to be due to *B. dysenteriae* Shiga and two to *B. dysenteriae* Flexner. Only in one case so far has *E. histolytica* been present in the active form. As already mentioned, a large number of convalescent cases were admitted from whose faeces (for the most part not of dysenteric type) no organisms of the typhoid-dysentery group were recovered. There were probably 150 to 200 of these. In a certain proportion of these flagellates were found to be present in the stools, but owing to pressure of work it was impossible to analyse these cases more exhaustively. Recently, however, a fresh batch of these convalescents arrived, and the opportunity was taken to ascertain by agglutination tests with the serums of the cases what proportion of them had suffered from bacillary dysentery. The necessity for this investigation was rendered the more urgent as conflicting evidence had reached us with regard to the relative proportion of bacillary and amoebic dysentery in the Near East. The history given by these convalescents did not point invariably to dysentery, but might have been construed in some cases as typhoidal infections. We have now examined the serums of over 100 of these cases, the stools in all (except one) being negative as to *B. dysenteriae*, *E. histolytica*, and typhoidal organisms. The technique was that described in the previous paper. Time limit twenty-four hours.

Determination of the Upper Limit of Agglutination of B. dysenteriae Shiga by the Serum of Normal Persons.

It has been generally held that agglutination of *B. dysenteriae* Shiga in a dilution of 1 in 50 is significant of infection, and the statement is probably in the main true, but such statements are unfortunately not accompanied by specifications of the time limit, the method employed, and the degree of agglutination at this dilution. We therefore decided to obtain the upper normal limit in a series of serums of normal persons (generally orderlies) who had never been out of the country, and had never suffered from dysentery. Twenty-three such have been examined under the prescribed conditions, with the following result:

14 gave no agglutination whatever at 1 in 50.
3 gave a trace of agglutination at 1 in 50.
3 gave agglutination amounting only to one + at 1 in 50, but no agglutination at 1 in 100.
3 gave agglutination amounting to one + at 1 in 50, and a mere trace of agglutination at 1 in 100.

In no case was complete agglutination at 1 in 50 with normal serum obtained.

It was decided therefore to treat all reactions above "50 (+) 100 (trace)" as significant.

Results in 103 Convalescents, the Great Majority of whom gave a History of Dysentery.

24 gave no agglutination in 1 in 50.
12 gave a trace of agglutination in 1 in 50.
11 gave agglutination (+) in 1 in 50, but no agglutination at 1 in 100.
7 gave agglutination (+) in 1 in 50, and a trace of agglutination at 1 in 100.

The above (54) fell within normal limits. Of the remaining 49 cases—

15 gave agglutination with end point between 100 and 200. (Illustrative reaction, 50 (+++) 100 (+) 200 (0).)
19 gave agglutination with end point between 200 and 400. (Illustrative reaction, 50 (++++) 100 (+++) 200 (++) 400 (0).)
15 gave agglutination with end point beyond 400. (Illustrative reaction, 50 (++++) 100 (++++) 200 (++++) 400 (+++), 800 (+).)

We conclude, therefore, that 49 or 47.5 of the convalescents have suffered from bacillary dysentery (type Shiga).

Dr. Woodcock, parasitologist to the hospital, found 41 per cent. of these cases showed in the faeces either one or more of the following protozoa—namely, *Lamblia intestinalis*, *Trichomonas*, or *Entamoeba coli*. The positive Shiga agglutination cases were not found to be more liable to harbour the above protozoa than the negative Shiga cases.

REFERENCE.

[1] Ledingham, Penfold, and Woodcock, Recent Bacteriological Experiences with Typhoidal Disease and Dysentery, BRITISH MEDICAL JOURNAL, November 13th, 1915.

METASTATIC ENDOPHTHALMITIS IN A CASE OF CEREBRO-SPINAL MENINGITIS.

BY

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I THINK the following case worthy of record for two reasons—(1) the way the threatened panophthalmitis was aborted, and the quick resolution of the inflammation, possibly due to the antimeningococcus serum; (2) the cultivation of a pure growth of meningococcus from the interior of the eye.

Private H., aged 19, had pneumonia on the transport during the voyage from Australia. He arrived in Egypt on September 28th, and was sent to a convalescent hospital.

He was well until October 9th, when he had severe headache, diarrhoea, and vomiting, with rise of temperature. On October 10th the headache was worse, he became unconscious, and was admitted to hospital. He then had all the signs of meningitis: head retracted, vomiting frequently, restless, and groaning; temperature 103°. Extensor response present, and also Kernig's sign. The eyes were apparently normal, except that the right pupil was noticed larger than the left; both pupils acted to light; there was no deviation.

On October 11th, lumbar puncture showed cerebro-spinal fluid under pressure, turbid, and clotting rapidly.

Bacteriological Report. — "Fluid frankly purulent, stained films show preponderance of polymorpho-neurophiles with numerous endothelial cells and a small intracellular Gram-negative diplococcus. Culture on Buchanan's medium shows a pure culture of a Gram-negative diplococcus, morphologically indistinguishable from the meningococcus of Weichselbaum."

October 12th. The left eye was noticed to be inflamed, and when I saw the case the same morning the lids were slightly swollen, there was slight ptosis, general injection of conjunctiva, episcleral oedema, cornea hazy, Descemet's membrane covered with thin yellowish film; anterior chamber deep, turbid, and iris covered with thick grey-yellow exudate; pupil contracted, inactive to light, and completely filled with exudate; no fundus reflex obtained; globe tender; tension slightly subnormal; vision bare perception of light. There was no proptosis, and ocular movements were full in all directions. There was no discharge from the conjunctiva, and no dacryocystitis. There was partial left-sided facial paralysis.

I diagnosed metastatic infection, and, deciding that there was

no urgent need for operation, ordered atropine 1 per cent. with cocaine 2 per cent. to be instilled and hot fomentations to be applied every three hours. The right eye was quiet; pupil active to light; fundus normal; vision good.

October 13th. The pupil was still firmly adherent and tension had become raised a little. Under cocaine and adrenalin anaesthesia I washed out the conjunctival sac with sterile mercury perchloride solution 1 in 5,000 and performed a paracentesis of the anterior chamber, removing some of the pus to a culture tube of Buchanan's medium. Treatment was continued as before.

Bacteriological Report.—"Culture on Buchanan's medium shows a pure growth of an organism morphologically identical with the meningococcus."

The next day the pupil started to dilate, and on October 15th had given for three-quarters of the circumference. On October 16th it was quite free and the anterior chamber was clearing; a thick ring of yellow exudate was left on the anterior capsule of the lens. The tension was about normal and vision perception of light. The facial paralysis had practically recovered.

The eye continued to clear under local and general treatment, and on October 20th the pupil was well dilated, episcleral swelling subsided; tension was about equal in both eyes, and both subnormal. Vision=hand movement. No fundus details could be made out, and only a yellow-green reflex obtained. On convergence the left eye already diverged. The local treatment was now dionine 0.0005 gram, atropine 1 per cent. every six hours, and fomentations as before. A culture taken from the conjunctival sac showed a growth of *Staphylococcus albus* and no meningococci.

On October 27th the eye was quieter; the pupil was dilated, with one small adhesion at ten o'clock. The anterior chamber was clear, the lens capsule nearly clear, the vitreous clearing; only greenish-grey reflex and gross floating opacities were made out. Vision was perception of light, and becoming worse. Atropine and dionine now only bare dilatation.

On November 1st the eye was quiet, the iris showed several snail-track-like grey eroded patches scattered around, the anterior chamber was clear and of medium depth, anterior part of vitreous fluid and clear, and a large yellow-green mass was seen floating in upper quadrant; neither vessels nor disc could be seen. The tension was −1 and the vision perception of light, and the eye was apparently beginning to shrink. The general treatment has been to draw off 15 to 20 c.cm. of cerebro-spinal fluid from the lumbar region and replace with an equal amount of antimeningococcus serum about every two days, according to symptoms. The patient has steadily improved in general health, and is apparently now on the road to recovery.

THE DOMICILIARY TREATMENT OF PULMONARY TUBERCULOSIS.

BY

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IN view of the fact that at the present time there is very little, if any, institutional means in most of the London boroughs for dealing with advanced cases of pulmonary tuberculosis—apart, that is, from the general hospital or infirmary—the question of how to deal with advanced cases in their homes is of the greatest importance.

London boroughs vary very much both in administrative schemes and in the character and variety of local agencies dealing with tuberculosis, but in a few respects at least the facts with regard to Greenwich may have some value for every borough.

It appears from a comparison between the number of deaths and the number of cases nursed in Greenwich that many more than half the patients who died at home did not receive skilled nursing attention.

The deaths from pulmonary tuberculosis numbered 129 during 1914 in Greenwich. Of these deaths, 50 occurred in Poor Law and similar institutions, 17 in hospital, and 62 at home. The number of cases nursed during 1914 was 46, and 24 of these cases died during the year. There are three district nursing associations in the borough, employing in all 12 nurses.

At first sight this return, as far as regards the places where death occurred, appears satisfactory, as more than 50 per cent. of the deaths have taken place in institutions. Also, although there were 62 deaths at home, 46 cases had nursing supervision, with its attendant prevention of the spread of infection. It appears, however, that many of the cases nursed were not among the deaths. Satisfaction with the return is also modified by the fact that many of the patients shown as having died in an institution in reality required nursing—many of them before entering and many after leaving or before re-entering the institutions.

The leaving notifications (hospital and infirmary) during 1914 numbered 48. There were 24 deaths among these patients. Of these deaths 5 occurred at home, and 3 of the home deaths had the benefit of nursing. The remaining 19 deaths took place in institutions, and 2 of these patients during the period between their discharge and return were nursed.

These 19 *returned* patients are, of course, included in the 67 patients who died in institutions, and who, therefore, at the first glance, might be considered as not having needed nursing.

A patient who "takes his discharge" from an infirmary or hospital and becomes so rapidly worse that he dies within the year, in all probability requires home nursing, whether he dies at home or enters the infirmary to die. The large majority of institutional deaths take place in the infirmary.

These patients prefer, as a rule, to stay at home until desperately ill and leave the infirmary on the slightest pretext.

The result of this is placed on record in the Final Report of the Departmental Committee on Tuberculosis: "Infection is frequently disseminated by persons suffering from advanced pulmonary tuberculosis who are in the habit of entering and leaving Poor Law institutions, having regard merely to their own convenience, and not to the interests of their family or of the community in which they live."

Considering the advanced character of the disease in most cases treated in these institutions, it would probably, therefore, be nearer the mark if one considered all such cases in need of nursing after discharge. Certainly, if, as in Greenwich in 1914, 50 per cent. of these cases die during the same year, it is probable that the majority of the survivors have been during the year in need of attention.

If the 48 leaving notifications, *minus* the 5 patients that died at home, are added to the total 62 deaths at home, 81 per cent. of the total deaths will be found to have required nursing during 1914.

The greatest number of visits paid to a patient was 60. The average, obtained from the total numbers of patients and visits, worked out at 20 visits a patient.

The work cannot be carried out by dispensary nurses unless the number attached to the dispensaries is greatly increased. If for the purpose of estimating the number of visits required one takes, not the 81 per cent. mentioned above, but only 66 per cent., or, say, two-thirds of the deaths, at an average rate of 20 visits to each patient, the estimated number of visits would in many instances approach the number of visits actually paid by the nursing staff. As an illustration:

	Deaths.				N.	Visits.	
	Total.	P. L. I.	H.	D.		C. F.	A.
Paddington	156	42	35	79	664	2,925	2,080
St. Marylebone ...	149	87	15	47	526	2,219	1,986
Stepney	447	198	55	194	2,038	10,016	5,960

Total = Total deaths 1913. P. L. I. = Deaths in Poor Law institutions. H. = Deaths in hospital. D. = Deaths at home. N. = Primary pulmonary notifications. C. F. = Central Fund report visits paid. A. = Estimated visits to advanced cases.

To attempt the nursing from the dispensary of those who died at home, even if such a small number of visits as to average 20 per patient were paid, would in itself be sufficient to cripple the work in connexion with other than advanced cases.

The Greenwich Dispensary had not completed a full year in 1913. Throughout 1914 the nurses did not attempt any home nursing, even of bed-ridden patients who had formerly been dispensary patients.

Greenwich, 1914.

Deaths	129
Primary pulmonary notifications ...	308
Visits paid	3,676
Visits estimated to two-thirds of the deaths at above rate	1,720

The deaths alone, moreover, give no indication of the

number of patients who survive for a more lengthy period, and who also require nursing during relapses.

If to the 62 home deaths were added the 22 nursed cases who survived the year and the 38 "leaving notifications," after subtracting the deaths at home and the number nursed from the total "leaving notification," the estimated number of visits to 122 cases would be 2,440. Perhaps if this number were doubled it might indicate, as far as regards last year's figures, the amount of work required in endeavouring to prevent the spread of infection by these cases.

At least two additional whole-time nurses would be needed at Greenwich if this work were to be attempted from the dispensary. The Greenwich Dispensary nurses visit all notified patients of every description, and the district nurses are informed of those cases requiring home nursing. The dispensary nurses were formerly Ranyard nurses, and are in close touch with the Ranyard Association.

In spite of this, however, it is evident that a considerable number of cases do not receive adequate attention, and many no attention at all. Some of the patients move out of the district of the particular nurse who has been in attendance. Many patients who receive nursing aid recover to some extent and ask the nurses to cease calling; a later relapse is followed by a call for the doctor, but not for the nurse; and, from the point of view of prevention, careful nursing of these cases is of much greater importance than medical aid. Careful nursing, backed up by medical authority, is essential. Both for the sake of the patient and of the community domiciliary treatment should always include skilled nursing in addition to medical advice. Many other patients refuse help from the nurses, or other members of the family object.

A closer connexion between the nursing associations and the public health administration might obviate some of these difficulties, and arrangements to this end are now under consideration in Greenwich. Perhaps the most desirable arrangement would be that the actual nursing of a patient receiving domiciliary treatment should be carried out by a nurse from the dispensary appointed to deal with advanced cases, and that a health visitor should keep the case under observation when actual nursing was not required, all, of course, under medical supervision.

Since it is generally accepted that "there can be no manner of doubt that the far advanced or dying cases constitute the greatest source of infection," it follows that any scheme for the prevention of tuberculosis which does not deal adequately with these cases will fail in its object.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

WOUND DRESSING.

SHOULD a wound arrive in a very foul condition it should not be covered with a dressing directly applied. A patty pan, having a hole about the size of a shilling punched through its centre, should first be placed over the wound. Patty pans cost 2d. or 3d. a dozen at the ironmonger's, and can be bent by hand to the shape of the part. They have rolled-over edges, and lie smoothly and comfortably on the sound skin remote from the wound. Dressings are applied outside the pans. Nothing, therefore, touches or blocks the wound itself, and discharges freely flow into the hollow of the pan and its covering dressings. When desirable the pan is held in place by one or two strips of strapping passing across its edges. All the discharge will be found in the hollow of the pan and the dressings, and practically none in the burrows of the wound, at the subsequent dressing. The pan can be boiled and used again.

A wound should be syringed out from the bottom if it extends deeply. To this end the ordinary syringe nozzle should be replaced by 6 in. of thin copper tubing, say $\frac{1}{8}$ in. in diameter. For convenience the tube should be bent near its screw attachment through an angle of about 60 degrees and its free end rounded with a little solder.

For syringing, as a general rule, hypochlorous acid, the $2\frac{1}{2}$ per cent. solution of Professor Lorrain Smith and his coadjutors (eusol), should be used, and the wound dressed by applying a pad of gauze moistened with eusol, and folded to the size of the wound treated. This is covered by a similar pad of wet wool, which holds liquid better. Over this should be placed a piece of waterproof tissue, slightly larger than the dressings beneath. Finally, a good pad of cotton-wool should be applied, extending well beyond the waterproof tissue, especially below it in the line of drainage. The size of the waterproof tissue is not unimportant as it determines that of the wool which has to project beyond it sufficiently far to absorb any discharges escaping from beneath the impervious material. In war especially economy is a virtue, and the effort to attain it encourages attention to detail. Thus treated, a wound should be clean and healthy in two or three days, if free from any foreign body or dead bone.

The best waterproof tissue procurable can be made by any one for 6d. a square yard, about one-fourth the usual price. I buy a length—say 30 yards—of "madapolin" (a thin strong calico) 42 in. wide, at $4\frac{1}{2}$d. a yard. I tear it into yard lengths, and dip a piece at a time into cold boiled linseed oil. This I wring out by hand, and wipe off any surplus oil from the twisted mass and my hands with the yard of dry madapolin next to be treated. The oil-soaked piece is hung up on a horizontal wire by three safety pins, and the following day is hung the reverse way up. A second reverse is generally desirable. The whole dries in a week in an open shed, or in about ten days in a garage in winter.

The hospital of 200 beds with which I am connected uses little else to cover wet dressings or protect splints since I introduced it. The same piece is commonly used repeatedly, as it stands scrubbing well.

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SODIUM SULPHATE IN DYSENTERY AND INFANTILE DIARRHOEA.

IN the JOURNAL of November 13th Dr. Penfold refers to the discovery of the *B. dysenteriae* (Flexner) in two cases of infantile diarrhoea under his care and to its recognition by others in similar cases. I have for several years regarded infantile diarrhoea as so closely allied to pure bacillary dysentery in children that I have invariably submitted them to the same treatment.

This consists, briefly, in the administration of sodium sulphate in doses, for children under 1 year, of 5 to 15 grains every two or three hours. A preliminary dose of castor oil is valuable in all cases. Milk is generally excluded from the diet for a few days. Under this treatment the mortality from this disease in my own practice has been reduced to an almost negligible percentage.

In the cases of dysentery occurring amongst the Mediterranean Forces, failure to find any one special bacillus as a causative agent appears to have been frequent in laboratories, owing probably to the bacteriological examination being made after the disease has existed for some time, as the dysentery bacilli very quickly are crowded out by other intestinal species. Experience of bacillary dysentery in the tropics has convinced me that the administration of bismuth and opium should be avoided, and that the treatment by 1-drachm doses of sodium sulphate every hour or two is to be preferred to every other. The frequency of dosage is modified as the pain and tenesmus lessen, and the character of the stools, as shown by the disappearance of blood and mucus, improves. The drug should be continued for some time after the stools have become entirely free from a trace of blood or mucus. No harm, but rather good, will result from the patient having three or four loose stools daily.

Both amoebic and bacillary dysentery respond at once to this treatment, but should amoebae be found later in the stools emetine should, of course, be administered. It is unnecessary otherwise. The earlier the treatment is adopted the more quickly and completely patients will recover.

W. J. J. ARNOLD, B.A., M.B., D.P.H.

THE Royal Dental Hospital, Leicester Square, has received a donation of £2,000 from the trustees of the late Miss Harker-Smith. The Chelsea Hospital for Women has received a legacy of £1,000 bequeathed by the late Mr. John Samuel White.

Reports of Societies.

THE WORK OF A CONSULTING SURGEON WITH THE BRITISH FORCE IN FRANCE.

A special meeting of the Ulster Medical Society was held on December 21st, 1915, in the Medical Institute, Belfast, under the chairmanship of the President, Dr. Gardner Robb, to hear an address by Colonel Andrew Fullerton, one of the Consulting Surgeons to the British Expeditionary Force in France, on his experiences of war surgery. Colonel Fullerton received a hearty welcome on rising, and, after a few introductory remarks, proceeded. The work of a consulting surgeon, he said, varied according to whether he was placed in charge of a number of casualty clearing stations or of base hospitals. His own experience was that of a large base with a considerable number of stationary and general hospitals. These hospitals or units were in charge of a commanding officer, usually of the rank of lieutenant-colonel, with a major as second in command. The commanding officer was responsible for everything connected with his unit. There were attached to each hospital one or two surgical specialists, and, generally, several junior surgeons and physicians, as well as *x*-ray specialists and pathologists, the whole forming a first-class hospital, comparing favourably with some of the best general hospitals at home. The surgical specialists were highly qualified surgeons, and the work done by them was of a high order, and reflected great credit upon the service of which they were temporary members. Most of the regular R.A.M.C. officers were doing administrative work, but several of those who were surgical specialists before the war were retained in their positions. The work of these officers also was of a very high order. The *x*-ray work was good, and in one or two hospitals was as near perfection as could be. The help given by the pathologists in every case in which it had been sought had been of inestimable value.

It would be readily understood that every day cases cropped up in which a second opinion was desirable or necessary, and Colonel Fullerton said that the system of consultants worked with the utmost smoothness in his area. The more competent the surgeon, the more desirous he was of talking over his difficult and dangerous cases with the consultant. Cases were constantly arising in which it was desirable that the consultant should himself operate, and every facility was placed at his disposal for the discharge of this duty. The consultant was, in fact, responsible for all the surgical work done in his district, and he was usually fortunate in the officers over whom he had supervision.

Colonel Fullerton said that he had had the opportunity of seeing the work of the field ambulances and the casualty clearing stations, and traced the progress of the wounded man from the firing line to the base. He paid a high tribute to the wonderful organization of the R.A.M.C., which had covered itself with glory in its fight with injury and disease. Nothing could exceed the smooth working and efficiency of the organization which transferred the wounded soldier from the trenches to the base or the hospital ship. The wounded soldier himself was loud in his praise of the officers, orderlies, and nurses, who took care of him from the moment he was carried in from the field until he was safely deposited, warm, well fed and clothed, in his hospital bed.

Colonel Fullerton then went on to speak of the surgical work carried on in his own district, and illustrated his remarks by a large series of lantern slides. Some of the *x*-ray photographs were of a high degree of excellence, and reflected great credit on the *x*-ray specialists. In connexion with injuries to the head, he stated that the War Office, recognizing that special work in this department would be invaluable to the army, had appointed two distinguished neurologists—physician and surgeon—as consultants in this branch of surgery, with the happiest results. Sepsis in brain surgery—as, indeed, in all branches of war surgery—was the bugbear of the surgeon, and required even more attention than operation. Deep searching for foreign bodies in the brain was discouraged, and a bullet that was causing no symptoms was left alone if not easily accessible. Excision of the septic wound, as far as possible, was carried out with good results. Persistent hernia cerebri was treated by lumbar puncture or decompression operations.

The knee-joint was one of the greatest trials of the military surgeon. If the patella were shattered it ought to be removed. If the lower end of the femur or the upper end of the tibia were badly comminuted it was probably better to amputate at once above the knee. The question of the removal of foreign bodies from the knee-joint was a difficult point. Rough particles, like shell and bullet casing, had probably carried in bits of soiled clothing with micro-organisms, and were better removed, but each case must be considered on its merits, and the judgement and experience of the surgeon would often be taxed to decide on the proper procedure. Swollen septic knee-joints, with no fracture and no retained foreign body, offered a problem requiring abundant experience, and he had made it a point to see every available case and watch its progress. He had come to the conclusion that indiscriminate draining of knee-joints with tubes was a mistake. Fixation, excision of the wound, aspiration and washing out with saline, aspiration and injection of such substances as ether, formalin, and glycerine, etc., simple incision without the use of a tube, packing of the joint with gauze, laying open the joint by turning back the patella, with, perhaps, full flexion of the joint, were all measures useful in different cases. Failing benefit from these, amputation was the only resource.

In the hip it was occasionally necessary to remove the head of the bone in order to drain the joint, and he described several cases in which life had apparently been saved thereby. In the shoulder and elbow excision had been followed by good results.

The means employed to immobilize fractures, as used in France, were described, and it was said that the main objects the surgeon had to keep in view were fixation, drainage, and sterilization of the wound. The last was the most difficult, and in some cases was impossible.

Finally, slides showing the splints in general use in France were exhibited, including Major Sinclair's apparatus for suspending limbs in splints, and Captain Bryan's segmented suspension bed for the treatment of patients with wounds in the back, buttocks, etc.

Opinion in France was divided as to the best antiseptic. Wright's hypertonic saline was lauded by some, eusol by others, while a third set of surgeons had almost lost faith in antiseptics, though they were willing to try anything that might be suggested. While micro-organisms were easily enough killed in a test tube, the problem of their destruction in the tissues was quite another matter.

A very hearty vote of thanks to Colonel Fullerton for his address was suitably proposed by Professor Sir John Byers, seconded by Dr. J. Walton Browne, supported by Mr. A. B. Mitchell, F.R.C.S.I., and enthusiastically passed.

Reviews.

FEEBLE-MINDEDNESS.

Dr. Goddard has been for some years Director of the Research Laboratory of the Training School for Feeble-minded Girls and Boys at Vineland, New Jersey. There free from the routine work of administration and from the medical treatment of the patients, he has organized a school of research, and his book on *Feeble-mindedness*[1] is in the nature of a report on the work of the laboratory staff of the first five years in an attempt to discover the causes of feeble-mindedness from an examination of the 327 cases in the institution. It is not claimed that the report is complete, but rather that it is a preliminary statement of results.

As regards the consequences arising from mental defect, the writer opens with a working hypothesis which he states as follows:

> There are all grades of responsibility from zero to the highest; and there are all grades of intelligence from practically none up to that of the genius or the most gifted. Responsibility varies according to the intelligence. Responsibility and normality of intelligence are relative to the environmental conditions.

[1] *Feeble-mindedness: Its Causes and Consequences.* By H. H. Goddard, Ph.D. New York: The Macmillan Company. 1914. (Demy 8vo, pp. 611; illustrated. 17s. net.)

Responsibility can be measured by measuring the intelligence, and knowing the degree of responsibility we know how to treat.

The defect of function is due to incapacity, not to a failure of will.

It is, however, in the question of the application of the Mendelian law to the problem of mental deficiency that the interest of the book mainly centres, and to this our principal attention may be devoted here.

The greater part of the book—nearly 400 pages—is occupied with a record of cases; these are admirably described and freely illustrated with photographs of the individuals and examples of things written or drawn by them. Each case record is accompanied by a chart giving the information as to the condition of other members of the family, obtained from relations or the family doctor and supplemented by the personal inquiry of field workers—that is, ladies specially prepared for the work who have gone to the home and personally followed up all available sources of information. These charts are one of the distinguishing features of the book; another is the fact that the cases are not selected but comprise all those residing in the institution; and the third is the mode of classification of this material.

The main grouping is on the basis of probable causation. The causes assigned are: (1) Feeble-minded heredity; (2) neuropathic (as opposed to feeble-minded) family conditions; and (3) accident. There are some cases for which no cause can be discovered and a few which cannot be classified; but a large majority are, on the strength of the evidence supplied by the family history charts, grouped as hereditary or probably so—namely, 198 out of 327. Within the groups the cases are arranged in order of their so called mentality; by this is meant the result obtained by the application of a Binet test, which gives an approximate measure of the intellectual endowment of the individual. The intellectual age of the cases thus estimated ranges from correspondence with that of a child of 12 (of which there is one example), down to the condition of an infant 1 year old. The whole constitutes a storehouse of valuable material, well worked out and conveniently arranged.

Several chapters follow in which the data provided by the charts are tabulated and discussed, mainly from the point of view of causation, and concluding chapters are devoted to eugenics and practical applications. As to the general tendencies of these and the main conclusions reached, we may for the most part agree with the author, especially as in the main they do not differ materially from the conclusions reached by other writers on grounds less fully elaborated. This applies in particular to the predominating influence of heredity in the causation of defect, and similarly in regard to the effects of environment, alcohol, criminality, syphilis, consanguinity, etc., and undoubtedly the facts and figures here arranged give additional strength to the conclusions arrived at.

The author himself admits that the data are incomplete, and asks us not to look for mathematical accuracy in a field like this: "The physician who waited until the facts on which he bases his diagnosis were absolutely proved would often wait until the patient was dead." With this we agree, and for most practical purposes the general conclusions pointed to may be, if they are not already being, acted upon. But when we are asked to formulate precise scientific doctrines as to the working of inheritance we are in no such urgent hurry, and we can afford to wait until the facts on which we build are clearly ascertained.

Dr. Goddard disclaims at the outset any preconceived opinions, though admitting the existence of impressions and feelings that he and his workers would find such and such things. It was therefore highly important that the evidence and the conclusions drawn from the evidence should be kept most rigidly apart. One cannot help regretting, therefore, to find such expressions as the following: "The best evidence of accuracy in the data will be discovered by a study of the charts themselves and the figures that have been compiled from the charts." This seems to betray a confused attitude towards scientific accuracy, and confidence is not restored on reading in one of the introductory chapters: "It is perfectly clear that if both parents are feeble-minded all of the children are feeble-minded. This being true, we had a right to mark all of the children on our first chart in this case feeble-minded, since both parents are in this condition. But we have never done this." The mere suggestion that in a piece of inductive work such as this aims to be it might be considered right to modify the data in accordance with conclusions deduced from the material under examination is, to say the least, startling. Again, why should the fact that a father was entirely unknown to his wife's family be regarded as laying his mental condition under suspicion? So, too, in an investigation of this kind one has no right to invoke the type of the child as evidence of its hereditary origin. Again, why should a writer who takes a purely intellectual standard of deficiency attach importance in the charts to the fact that an individual was ugly or of a heartless disposition?

In the three chapters devoted to the Mendelian theory in relation to feeble-mindedness, the figures obtained from the data are analysed on the hypothesis that feeble-mindedness is a recessive Mendelian unit-character due to the absence of a determiner for normal mentality. We are practically all agreed that defect is to a very great degree inherited in some way or other; many also are disposed to accept the view that intelligence comprises both a general factor on the one hand and various special factors on the other; but the adoption of the view that mental deficiency can be regarded as a unit-character obedient to Mendelian laws carries with it difficulties and implications which demand for its acceptance full and positive proof.

As an example of implications that flow from the idea of a unit-character, the presence of other characters, which will, *ex hypothesi*, be inherited independently, can have no bearing on the feeble-mindedness unit; thus it would not be fair to count sexuality, ugliness, epilepsy, bad disposition, melancholy, migraine, or alcoholism in an individual as if they had a bearing on the transmission of mental defect. Hence the noting of such facts as that a person in the charts "committed suicide," or "was killed in a railway accident," must not be allowed to affect the consideration of this point however interesting they might be from other aspects.

On turning to the figures, it is found that an examination of the various matings recorded in the charts of the cases which the writer has placed in the hereditary group shows that there were 144 examples of a defective mating with a defective, while the records show that 65 per cent. of the offspring are known to have been defective, and only 0.8 per cent. are known to have been normal; this is sufficiently near to the requirements of the Mendelian law that all such children must be defective, that we may let it pass with the remark that it is the result that would be anticipated by almost any theory of heredity, and whether the defect were a unit-character or no.

When the writer comes to deal with matings of other types he finds 324 out of 1,345 that can be used for his purpose. He then says: "When both parents are duplex all of the children must be normal. Of course we have nothing to do with this type of mating in a defective family." This appears to beg the question at issue. There are numerous matings recorded between normal persons with nothing in the facts to show whether they are duplex or simplex—that is, whether they do not or do carry a latent strain of defect.

The method adopted in dealing with these and other types of mating is "to assume the law, then see if the conditions as we find them can be accounted for on this assumption." "There have been two methods of determining the simplex inheritance of the parents; in some cases it has been the study of the ancestors, in others it has been the condition of the offspring." Here again the writer seems to be unaware that this is simply begging the question and making uncertain data conform to requirements, instead of checking them by further investigation of the facts.

On an examination of sixty-four charts—Nos. 133 to 197—which are included in the Hereditary and Probably Hereditary groups, we find thirty-seven matings in which one of the parents is normal and the other either defective or of undetermined mentality, and to which at least one feeble-minded child has been born. For this to be in accordance with Mendel's law it is necessary that the normal parent should have latent mental defect. For a pure duplex normal would have no patently defective children in the first generation. In none of these cases is there any evidence in the data to show that these normal

parents carried any defective strain. These matings are not all included in those analysed, but wherever it is necessary for the author to assume a latent defect this is done, on the presumption that latent defect may be taken for granted in half the cases. In the same charts there are 10 cases also in which a feeble-minded child is recorded to have normal or probably normal parents, in regard to whom there is no evidence that both are simplex, as required by the law.

The author confesses to being one of those psychologists who find it hard to accept the idea that the intelligence ever acts as a unit-character, but he finds no way to escape the conclusion of the figures. May it be suggested that the best defence against the figures lies in the facts? What is wanted is further "field" work to test the assumptions made. For our part we feel bound to suspend judgement till this is done.

THE PHYSIOLOGY OF THE EMOTIONS.

THE eight papers which Professor CRILE has brought together under the title of *The Origin and Nature of the Emotions*,[2] deal with as many at first sight distinct subjects, but the underlying unity of aim is not far to seek. There is, as was inevitable, a certain amount of overlapping and reiteration, but, inasmuch as each essay reveals a new aspect and a broadened application of the main principles which the author seeks to establish, the book loses nothing of interest on that account. Professor Crile has devoted many experiments and much thought to the problem of shock, which he has come to regard as a state of exhaustion of the brain centres caused by impulses entering the system through the receptors for pain, which Sherrington designates "noci-ceptors." He finds that the abdomen and chest when traumatized stand first in facility for causing this discharge of energy, that is in shock production, being followed by the extremities, the neck and the back, while the brain and other protected parts give no such response. This suggests the natural selection of regions much exposed to injury from without as sites for nociceptors, as the discharge of energy which culminates in shock is previously available for purposes of flight or resistance; "the greatest shock," he says, "is produced by any technic which imitates the method of attack and of slaughter which is used by carnivora." He finds that armoured animals are comparatively immune to both shock and fear, and that in general proneness to fear, distribution of nociceptors, and susceptibility to shock go hand in hand. The nerve-muscle reactions which, preceding the exhaustive stage (shock), follow stimulation of nociceptors are specific and purposive. In the case of civilized as contrasted with savage man, direct reaction to injury or to disturbing conditions in general is, however, subject to all sorts of restraint. Emotion the author regards as a state in which the resources of the organism are mobilized for an action which cannot or does not ensue. Such an action would be specific to the stimulus and racial in origin—"a phylogenetic fight is anger; a phylogenetic flight is fear; a phylogenetic copulation is love." To us it seems that these are mere feelings, comparable to those of caged animals, and that the difference between such feelings and the distinctively human emotions is qualitative, not a mere matter of degree. In emotion there is, or may be, a leaven of ideality, for which, *pace* Professor Crile, no mechanistic explanation can conceivably suffice. It is surely characteristic of the emotions that they energize the intellect and will, and are not limited to self-regarding modes of expression. But, then, Professor Crile does not believe in intellect or will otherwise than as products of an all-creative environment. In one of these papers, entitled "A mechanistic view of psychology," he asserts roundly that "if the full history of the species and of the individual could be known in every detail, then every detail of that individual's conduct in health or disease could be predicted." Such statements are as easy to make as they are impossible either to refute or substantiate.

Space forbids more than mention of the interesting and suggestive sections which deal with headache and other pains in certain forms of infection, the clarifying functions of laughter and weeping, the relation of acidosis and hydrogen-ion concentration to anaesthesia or death. But we would call special attention to the address on the kinetic system, in which evidence is adduced that, in regard to the production and output of energy, the stress of life is shared by a chain of organs consisting of the brain, the adrenals, the liver, the muscles, and the thyroid gland.

This thought-provoking volume cannot fail to enhance its author's already high reputation as a physiologist, and will be read with pleasure not only on account of the value of its matter but also for its picturesque force of style.

[2] *The Origin and Nature of the Emotions.* By G. W. Crile. M.D. Miscellaneous papers, edited by Amy F. Rowland, B.S. Philadelphia and London: W. B. Saunders Co. 1915. (Med. 8vo, pp. 240; 76 figures. 13s. net.)

EMBRYOLOGY.

IN his *Manual of Embryology*[3] Professor PATERSON has evidently sought to set before the student the fundamental facts of this science in as simple a fashion as possible. Minutiae have been rigorously excluded wherever this could be effected without injury to the conception which the student should possess of embryological processes. Further, the facile pencil of the author has been pressed into the service, and a large number of simple and ingenious diagrams help the student in his progress through the text. In a book of this character there must necessarily be omissions; there is little room for theories, while all doubts are hidden under a vigorous didacticism, as, for example, in the account of the developmental changes occurring in the region of the cloaca. Such features are, however, part and parcel of the book, and were, no doubt, intentionally selected, the author's aim being to give the medical student a fair and complete working idea of the subject in the short period available in the curriculum for its study. If the book is open to any criticism it is that for the sake of simplicity there is at times a somewhat unnecessary sacrifice of reality, and we think that if the author were in a future edition to replace some of the diagrams with figures drawn from nature he would increase very considerably the value of the book. We would suggest that in Fig. 27 the embryonic stalk should be shown, and that in Fig. 263 anachronisms might be avoided. In a number of the diagrams dealing with the chorion, the venous sinuses appear between the chorion and decidua instead of actually within the latter. These are, however, small blemishes, and do not seriously detract from the solid virtues of the book. Within his self-fixed limits the author has, in our opinion, given us the most concise and clear account of the subject in our language, and the book can be warmly recommended to the hard-worked and over-driven medical student as a book which is likely to mitigate both his labour and distress. While the book is primarily a book for students, both its plan and its diagrams will afford teachers of the subject no little assistance in the arts of arrangement, compression, and simplification.

In his *Laboratory Manual and Textbook of Embryology*[4] Professor PRENTISS has supplied us with a book which has as its special feature an account of a method of dissecting pig embryos, with descriptions and illustrations of the dissections. With these are given for comparison dissections of reconstructed wax models, the result being that the student obtains the clearest possible conception of the changes which occur during, at any rate, the later stages of development. In addition to this special section, the author gives a clear and concise account of the development of the human embryo and of the more important stages in the development of the chick embryo. The book is excellently illustrated, and although the majority of the figures are borrowed from other works, quite a considerable number are original, drawn from specimens in the collection of the North-Western University Medical School. The book is of convenient size, and gives the medical student, for whom it is specially designed, all the information he requires. To him, as well as to the research worker, the book can be warmly recommended.

[3] *Manual of Embryology.* By A. Melville Paterson, M.D., F.R.C.S. London: H. Frowde, and Hodder and Stoughton. 1915. (Cr. 8vo, pp. 401; 304 figures. 10s. 6d. net.)

[4] *A Laboratory Manual and Textbook of Embryology.* By C. W. Prentiss, A.M., Ph.D. Philadelphia and London: W. B. Saunders Co. 1915. (Sup. roy. 8vo, pp. 400; 368 figures. 17s. net.)

A STRAIGHT TALK FOR ADULTS.

NOVELISTS who set out to write novels with a purpose and a lesson to teach may be divided into two classes—those, namely, who appeal to the reading public by the excellence of their art, and those who rely rather on the extravagant violence of their statements. As obvious examples of writers of the first class may be mentioned Charles Reade, author of *Hard Cash*, and Mrs. Harriet Beecher Stowe, author of *Uncle Tom's Cabin;* both these novels had intrinsic literary merits to account for their success. As an instance of novels of the second of the two classes mentioned above, a recent American production by UPTON SINCLAIR may be quoted, *Sylvia's Marriage*,[5] in which the author sets out to expose the alleged extent to which venereal disease is prevalent in the United States, and how this alleged prevalence is to be combated. Like certain other popular American authors, Upton Sinclair is a red-hot writer with the utmost violence of thought and expression at his command, when he so desires it; when he adopts the style of the shilling shocker, as in the present instance, he undoubtedly succeeds in giving the reader at least a guinea's worth of shock for his shilling. In *Sylvia's Marriage* the cruder aspects of gonorrhoeal disease are forced upon the reader as they strike a hard-bitten self-educated American divorcée of 47. The author quotes, and appears to endorse, the statement that 85 per cent. of the pick of America's young manhood are infected with some venereal disease while at their universities, and that "this is what is going on" "in every prep-school dormitory in America." In the pages of this novel we are introduced to mothers who encourage their sons to intrigue with mulatto girls; to medical men who do not recognize ophthalmia neonatorum when they see it, and have the strangest ideas of professional secrecy; to a state of society where temperance and continence are apparently unknown to the young men. Whether such exaggerations as these serve any useful purpose seems to us more than doubtful. No sensible person wishes to deny the existence of the social evils caused by venereal disease at the present time; but is it to be believed that any good will result from discussing their coarser aspects in stentorian tones from the house-top? The author appears to imagine that vice in the male will be lessened by instructing females in the grosser of its evil effects. To this proposition we cannot assent.

NOTES ON BOOKS.

HIS many admirers will welcome the volume of addresses which Sir DYCE DUCKWORTH has published under the title of *Views on Some Social Subjects*.[6] Medicine occupies an intermediate position between the spheres of thought and action. This makes it, however, in many ways more conducive to the development of a philosophical temper than a life purely devoted to either. There is a good deal of truth in the saying that "Lookers on see most of the game." Yet medicine has always proved herself a jealous mistress—was it not on her behalf that a Master complained of the brevity of life?—and perhaps this accounts for the fact that very few of those who have risen to the top of the professional tree have done really great things in literature. For Sir Dyce Duckworth the writing of these addresses has evidently been a pleasant by-activity. After reading one or two of them one knows in advance what the author's verdict will be on the remaining topical controversies indicated in his list. He is always strong in his allegiance to authority and tradition. In dealing with the alcohol question he is for temperance, not abstinence; recalcitrant woman is gently but firmly assurred that public affairs are no concern of hers; he will not concede any substance to the attacks made upon formal religion by representatives of the higher criticism, and of science. All is calm, sane, orthodox; but no better book could be recommended to any intelligent layman who wished to make a psychological study of the strength as well as the limitations of a typical professional mind. The opening address, "Knowledge and Wisdom in Medicine," is one of the best and most characteristic, but it is disconcerting to find the author, on p. 31, apparently identifying wisdom and "strong commonsense." Doubtless the verdicts of wisdom and commonsense will concur more often than not; none the less, on many occasions and on questions of vital moment they have been opposed. As expressions of the author's own wisdom, based on something deeper than commonsense, these addresses sound a useful note of warning to an age seething with revolutionary ideas.

So many misconceptions are abroad as to the real aims of the movement inaugurated by the late Sir Francis Galton that it is highly desirable that the general public should be enlightened thereon, and Dr. SALEEBY in *Progress in Eugenics*[7] has produced a manual which cannot fail to be of considerable service. He recognizes three departments of eugenic endeavour—positive, negative, and preventive. The first of these is concerned with the encouragement of worthy parenthood, the second with the discouragement of unworthy parenthood, and the third with the protection of all parenthood from the racial poisons—for example, venereal disease, lead, alcohol. The antithesis of "nature" and "nurture" of which we hear so much is for all practical purposes false; it is useless to provide for the birth of healthy children if we take no steps to secure their remaining healthy after they are born. Another fallacy is that which regards slum life as a defensible phenomenon inasmuch as its conditions are supposed to favour the elimination of the "unfit." For the survivors are assuredly damaged, and the moral and physical welfare of the entire community are impaired by the contagium of which every slum centre is a fruitful source. Dr. Saleeby's book has grave faults of manner; he writes too often in an *ex cathedrâ* tone which irritates the reader by its tacit suggestion that he is in a state of culpable ignorance upon matters as to which the author alone is in a state of grace. This is the more regrettable as it tends to create some prejudice against a book which is fundamentally sound and meritorious.

[5] *Sylvia's Marriage*. By Upton Sinclair. London: T. Werner Laurie, Limited. 1915. (Cr. 8vo, pp. 211. 6s.)

[6] *Views on Some Social Subjects*. By Sir Dyce Duckworth, Bt., M.D., LL.D. London: G. Allen and Unwin, Ltd. 1915. (Demy 8vo, pp. 320. 7s. 6d. net.)

[7] *The Progress of Eugenics*. By C. W. Saleeby, M.D., Ch.B., F.Z.S., F.R.S.Edin. London and New York: Cassell and Co., Ltd. 1914. (Demy 8vo, pp. 263; illustrated. 5s. net.)

NEW YEAR HONOURS.

THE following are among the members of the medical profession mentioned in the New Year honours:

K.C.M.G.

Surgeon-General Sir James Porter, R.N., M.D., K.C.B., Honorary Physician to the King, late Director-General, Medical Department, R.N.

Temporary Surgeon-General Sir William Watson Cheyne, Bt., R.N., M.B., C.M., Honorary Surgeon-in-Ordinary to the King.

K.C.V.O.

Surgeon-General Sir Anthony Bowlby, K.C.M.G., F.R.C.S., Surgeon-in-Ordinary to the King.

Knights.

George Andreas Berry, M.B., F.R.C.S.Edin., Honorary Surgeon-Oculist to H.M. the King in Scotland, Consulting Ophthalmic Surgeon Edinburgh Royal Infirmary, Ophthalmic Surgeon 2nd Scottish General Military Hospital, and ex-President of the Royal College of Surgeons of Edinburgh and of the Ophthalmological Society of the United Kingdom.

Thomas Wright Parkinson, M.D.Edin., Physician to H.R.H. Princess Louise of Battenberg and to Admiral Prince Louis of Battenberg. He is also the Prime Minister's family physician. He is a New Zealander by birth, and in his student days at Edinburgh was well known as secretary of the Australasian Club.

Milsom Rees, C.V.O., F.R.C.S.Edin., Laryngologist to the King and Queen and also to Queen Alexandra.

Dr. Rai Kailash Basu Bahadur, C.I.E., a member of the Municipal Corporation of Calcutta.

C.M.G.

Surgeon-General Guy Carleton Jones, Director of Medical Services, Canadian Expeditionary Force.

C.B.

Temporary Surgeon-General Humphry Davy Rolleston, M.D., F.R.C.P., R.N., Consulting Physician to the Royal Naval Hospital, Haslar.

Lieutenant-Colonel William Westropp White, I.M.S.

Fleet Surgeon Arthur Gaskell, R.N.

Surgeon-General William Henry Norman, R.N., C.I.E.

Dr. John Andrew Turner, Executive Health Officer, Bombay Municipality.

Dr. Suresh Prosad Sarbadhikary, of Calcutta.

Lieutenant-Colonel Robert Charles MacWatt, I.M.S., Chief Medical Officer Rajputana and Civil Surgeon, Ajmer.

M.V.O. (4th Class).

Staff Surgeon Robert Joseph Willan, R.N.V.R.

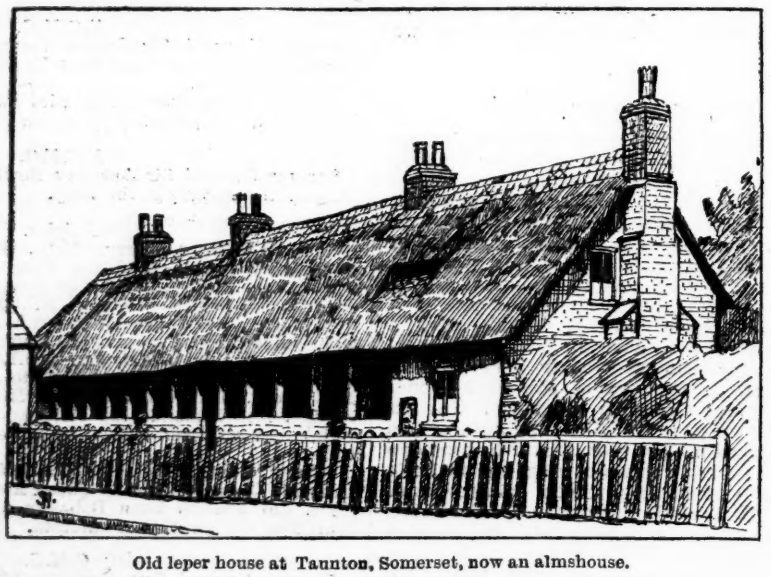
LEPROSY AND LEPER HOUSES.

THE history of leprosy in Great Britain—and, indeed, throughout Europe—forms one of the most remarkable chapters of epidemiology. For several centuries it was so widespread and the cases so numerous that the disease seized on the public mind, leading on the one hand to a great dread of it, which caused the enforcement of restrictions on the leper which were often cruel, consigning him to a living death; and, on the other hand, to a great outburst of benevolence which sought to mitigate the misery of the sufferers in their isolation by establishing homes in which they could live in some sort of comfort. No doubt diagnosis was not always accurate, and cases of other chronic diseases, such as joint and gland tuberculosis, lupus, and even psoriasis, may have been involved, but this does not explain the remarkable disappearance of the disease, rather it makes the explanation more difficult.

Monogram of Abbot Beere.

Dr. Mercier devoted his last course of FitzPatrick Lectures before the Royal College of Physicians of London to leper houses and mediaeval hospitals. He has published the two lectures in a pamphlet[1] which contains a great deal of information and some interesting discussion.

Leprosy existed in this country in Saxon times, and the oldest leper house, still existing as a charity, appears to be St. Oswald's Hospital at Worcester, founded by Bishop Oswald in 992. Dr. Mercier thinks, judging from the number of leper houses founded, that the disease reached its height in the second half of the twelfth century. In the first half of that century there were founded at least 46 hospitals, of which 24 were leper houses; in the following fifty years, at least 120, of which 56 were for lepers; in the thirteenth century, 240 hospitals, of which 75 were leper houses; and in the first half of the fourteenth century, 111, of which 42 were leper houses. In that century leprosy began to decline—a fact which Dr. Mercier associates with the Black Death, which swept the country in 1348–9. With the disappearance of leprosy the endowments of the leper houses either disappeared or were devoted to other charitable purposes. One of the oldest leper houses in England, the fabric of which still exists and is used for charitable purposes, is the Hospital of St. Margaret, Monkton, just outside Taunton on the London road. It is a long, low, narrow structure, consisting of seven distinct tenements, each with a staircase communicating with the room above; the walls are of stone, faced, for the most part, with plaster, and have a high-pitched thatched roof. The first and last tenements stand out in advance of the five middle ones, but the roof is carried on continuously from one end to the other; the middle part is supported on thirteen wooden posts, rising from a parapet wall and thus forming a kind of cloister, out of which doors open to the several apartments now in use as almshouses. According to the researches of the Rev. Thomas Hugo, published in the *Proceedings* of the Somersetshire Archaeological and Natural History Society for 1871, the charity was probably established about the middle of the twelfth century, for it is mentioned in an undated charter which must have been granted between the years 1174 and 1185. During the second half of the thirteenth century it received endowments from Thomas Lambright. It was at that time a dependency of the Abbey of Taunton, which appointed the chaplain of the hospital; it appears always to have been a small and poor institution, and possibly for this reason it was permitted to continue its charitable work down to the dissolution of the monasteries. When it was burnt down, early in the sixteenth century, it was rebuilt by Richard Beere, Abbot of Glastonbury, who inserted in the front wall a panel with an escutcheon bearing his initials, surmounted by a bishop's mitre. During the reign of Henry VIII it was still called the Spital House, and in 1548 housed "vj poore lazare people." Apparently about this time all the property was confiscated and sold. Mr. Hugo finds no evidence that the almshouse itself was sold, and thinks it probable that, as was the case with the Hospital of St. John the Baptist at Bath, thanks to some powerful man in the neighbourhood, the old building continued without interruption to be devoted to its ancient use. Exactly when it became an almshouse does not appear to be known, but in 1612 an order was made regulating for the time to come the management of the almshouse, and a "governor of the house and family there" was appointed. Eventually some of its endowments appear to have been recovered, and are still available. Since 1612 the place has been uninterruptedly used as an almshouse. In 1750 there were six residents, and the number has usually been six or seven. It is stated that "the only advantage the inmates derive from the charity is that they live house-rent free, but they are all recipients of parish relief. As a *quid pro quo*, the overseers receive the rents of the various lands, amounting at present to £45 10s., which rents are regularly credited in their yearly accounts passed by the union auditor, and go into the general fund in aid of the poor rates. The overseers out of their funds keep the 'Spital' in repair."


Old leper house at Taunton, Somerset, now an almshouse.

Another interesting example of the endowments of a leper house being diverted to other charitable purposes is afforded by the Magdalen School, Combe Down, Bristol, which, by an order made by the Charity Commissioners in 1891, enjoys the revenue of the endowments of a leper hospital founded in the twelfth century by the Prior of Bath Abbey. The prior built a chapel, dedicated to St. Mary Magdalen, and also a hospital adjoining for lepers. In the sixteenth century it was used for "lunatics," and there is evidence that in the eighteenth century two or three idiots were kept in the hospital at the expense of the master. In the last century, when the new scheme was settled, the income was applied to the purposes of the institution for idiots.

The incomes of some of the mediaeval hospitals were considerable, derived chiefly from gifts of land. The diet given to the lepers was in some cases liberal; thus, at Shireburn Hospital in Yorkshire, for 65 lepers the daily allowance, Dr. Mercier states, was a loaf and a gallon of

[1] *Leper Houses and Mediaeval Hospitals.* London: H. K. Lewis. 1915. (2s. net.)

ale to each, with meat on three days in the week, and fish, cheese, or butter on the remaining four days. In addition, they had fire, candles, and all necessaries.

Dr. Mercier dwells on the fact that tuberculosis seems in modern Europe to have replaced leprosy as the most serious of chronic infective diseases. He even goes so far as to put forward the hypothesis that the bacillus of leprosy has changed in the course of time into the bacillus of tubercle; the two, he says, are "so closely allied that if we hold at all the theory of evolution we must presume either that they own a common descent from some progenitor or that the one is evolved out of the other." He continues: "Thus the ancient leper house has not only its modern representative, but also its lineal descendant, in the modern sanatorium for consumption. In mediaeval times, every city and every burgh had its leper house. For all the triumphs of modern progress, modern science, modern sanitation, and modern care of the sick, we are still far behind our ancestors of six and seven hundred years ago in the provision of homes for the victims of the great scourge of Christendom."

MEDICAL CARE OF SCHOOL CHILDREN.

(Continued from p. 19.)

MOTHERS, BABIES, AND GIRLS.

IN the matter of schools for mothers there appears to be considerable danger of overlapping between the work of the Board of Education and the Local Government Board—the one being concerned directly with schools for mothers, and the other with maternity centres.

Tables are given showing the work of 157 schools for mothers; it would appear that the number of infants brought to the schools is not as yet very large. The return for 137 schools is 22,870, and the figures include children up to 5 years of age in several instances—that is, an average of 167 to each school. The average number of visits made with each infant varied in different schools from 2 to 19. Grants in aid made by the Board amounted in all to upwards of £6.100.

"Day nurseries" now number about 150; of these 80 applied for recognition, and received grants amounting to £5,100. The Board require as a condition of recognition a certificate from the medical officer of health to the effect that the institution is one which may suitably receive grants in aid.

"Nursery schools" have been founded by voluntary and independent efforts, and, as a rule, are intended to form a link between the home or the day nursery and the public elementary school, and are usually organized in general accordance with the recommendations of the Consultative Committee of the Board published in 1908. For the most part the ages of the children range from 3 to 5 years. The education given is largely a matter of practice in personal habits and conduct, of developing the brain, muscles, and senses, of teaching the beginnings of discipline and self-control. The general work of the schools can best be illustrated by a description of one of them. The Caldecott Community have had one in St. Pancras, London, since 1911. The school takes 57 children. The premises are specially furnished for the purpose. A bath-room, a cloak-room fitted with open wire boot holes, low wash-basins, a peg with a towel and toothbrush for each child, and a sleeping room furnished with stretcher beds, are provided. Two large classrooms are equipped with small tables and chairs and low wall blackboards. The daily time table is as follows:

9.0 to 9.30. Hats and coats removed. Washing. Teeth cleaning. Toys played with. Birds fed. Rooms dusted.
9.30. Prayers.
9.55. Cleanliness inspection.
10.0. Free occupations.
11.0. Lunch.
11.30. Singing games or free play. Gardens in summer.
12.0. School closes. Free play for those who stay dinner.
12.45. Dinner.
1.30. School reopens. Sleep for younger children. Free occupations for older children.
3.0. Children write diaries of day's work.
3.15. Closing exercises.
3.30. School closes.
4.0. Tea for those whose mothers are at work.
4.30 to 6.30. Play for those whose mothers are at work.

There is a routine medical examination of each child twice a year. There is a weekly meeting of a Mothers' Club, at which the mothers are encouraged to discuss the welfare of their children.

The teaching of mothercraft to girls in public elementary schools is making distinct advances. "Experience with schools for mothers shows that many women have had no instruction at all in infant care before their children were born, and that they have been dependent for advice on family traditions, and on hints given by neighbours and relatives. It is certain that infant mortality and suffering would be materially reduced if all women could have some training in the management of infants before or soon after marriage. If such apparently simple matters as the proper way to care for, to clothe, and to feed a healthy baby were known to them, they would without doubt be able to keep their infants in better health, and would be more ready to seek advice on the appearance of early signs of sickness." This instruction can be most generally given in school. "Girls of 12 to 14 years often take charge of their little brothers and sisters at home, and get some idea of the details of infant management." That practical experience makes them readily appreciative of teaching in school. Methods of washing, dressing, and clothing a child appeal to them, and practice in these details may lay the foundations of good treatment of their own children in later years.

Reports of the working of these classes show that they are essentially practical. At Swinton "a baby was procured for demonstration purposes when required, and each girl was given an infant to nurse, and become acquainted with the handling thereof whilst the demonstration proceeded."

UNCLEANLINESS.

Apart from the well-recognized conditions of physical defect that are to be met with in children, there are a number of disabilities that arise out of a general state of dirt and ill condition. It is even likely that this volume of physical unfitness is chiefly responsible for the incapacity of the child to take advantage of the education provided for it. Further, a dirty and ill-conditioned body is the easier prey to disease of all sorts. There is another side; any scheme of education that does not inculcate cleanliness as the first essential in the care of the primary capital of our youthful citizens is scarcely worth the name.

The routine medical inspections and the "systematic vermin surveys" conducted by the nurses in the schools show that there is still much room for improvement, particularly in the town children. The grand total for the conditions of the head of over a million children gives 81 per cent. clean, 17 per cent. nits only, and 1 per cent. with pediculi. The state of the body in the same children was a little better—85 per cent. were clean, 13 dirty, and in 1.2 lice were found. Approximately equal numbers of boys and girls were examined, and the comparison of the returns shows that dirty heads were 19 per cent. more frequent in the girls, and dirty bodies 7 per cent. more frequent in the boys. The long hair of the girls and the more permanent clothes of the boys probably account for the differences.

The towns are much worse than the counties. In London dirty heads total 21 per cent.; in the counties 9.5. In London, dirty bodies 21.4 per cent.; in the counties 3. Some of the difference is accounted for by the stricter methods of examination, and the higher standard of cleanliness held in London, but the fact remains that it is easier to be clean in the country than in the town. In combating this evil the "surprise" visits of the nurses play a valuable part, and have an advantage over the routine examinations of the doctors. The fact of inspection has a beneficial effect. On a finding of uncleanliness notices requiring cleansing are sent to the parents. Compulsory cleansing is carried out when the condition is not remedied after notification. Prosecutions are made under the attendance by-laws of the authority, or under Sections 12 or 122 of the Children's Act, 1908, against parents who, after repeated warnings, have failed to keep their children clean.

Although the figures given show that there is ample room for improvement, it can be said with certainty that there is a very different view of lousiness in the minds of the people now than was current even a decade ago. Then it was a natural effect, "bred from the weakness of the child," now it is a disgrace to most, and but for the perpetual nuisance

of a few incorrigibly lazy parents it would be well nigh banished from the schools. A great part of the social disability attached to the public elementary school would vanish with the extinction of the louse, and the magisterial authority which treats lightly his final arbitrament over the case of a habitual offender does injury to the majority of wholesome and cleanly mothers and children. The parent is the real offender, and in this connexion it is of interest to note the report that the areas which have been most successful in combating this unpleasant and degrading condition are those which have instituted home visitations by school nurses or by members of Children's Care Committees.

MALNUTRITION.

"Something like 10 per cent. of the total number of children attending public elementary schools are suffering from malnutrition." The returns this year are founded on the examination of half a million children, and they confirm the findings of previous years. Malnutrition is not exactly a measurable quality; it is one that must rest on the considered and careful opinion of the school doctor. It is based upon the balance of several findings: Weight in relation to stature, the general balance and "substance" of the body, the firmness of the tissues, the state of the skin and mucous membranes, the tone of the controlling mechanism as shown by listlessness or alertness.

A most interesting schedule of the returns obtained during the medical inspection is given for counties, county boroughs, boroughs and urban districts. The results show that, excepting London, the degree of malnutrition (below normal and bad) is lowest in the rural areas. In London the comparatively good record is credited to "the activities of the numerous organizations which exist in the area for the preservation and protection of the public health, and to the social machinery concerned in the amelioration of insanitary conditions arising out of uncleanliness and overcrowding." Probably some of it is due to the Friday and Saturday night coster markets.

The returns tend to show that more boys than girls suffer from malnutrition. This is possibly accounted for by the fact that there are more boys than girls engaged in some form of employment outside school hours.

School nurses and care committees have followed up children found to be defective and made inquiries into the conditions of their home life. The result has been in the main an insistent witness to the close connexion which exists between malnutrition and (1) unsuitable food, (2) enlarged tonsils and adenoids and tuberculosis, and (3) insufficiency of sleep.

Many medical officers speak of the importance of the food factor. Dr. Orr (Shrewsbury) writes: "The women of the working classes often show a surprising ignorance of the proper methods of cooking for family requirements; a want of knowledge of the value and suitability of foodstuffs." He debits the responsibility to our educational methods, and claims a place in making up this deficiency for the schools for mothers, where instruction is received "with the greatest enthusiasm and interest by the women." Dr. Macdonald (Northampton) says:

> Another potent factor in the production of chronic dyspepsia, which is, I believe, much more common amongst children than is generally thought, is the all-pervading antiseptic preservative. This is not restricted by any means to tinned products, but in the form of boric acid, formalin, salicylic acid, and so on, haunts our fresh butter, milk, cream, and other comestibles.

The London reports state that in one form or another tuberculosis is a cause of malnutrition in over 25 per cent. of the cases where any cause is assigned, and the parents are urged by the Care Committee to attend the local tuberculosis dispensary or other institution where treatment can be obtained. Dr. Roberts (Denbighshire) states that—

> Insufficiency of sleep is another cause which unquestionably has a deleterious effect upon the growth and healthy development of the school child. One feels that the evil habit of late hours is becoming more general. Children of tender years who should be in bed crowd the poisoned atmosphere of the picture-dromes, and before long it will become essential to make regulations controlling the admission of children to such shows, as the question is becoming one of vital importance.

Besides all these points there are certain conditions associated with growth that have to be taken into account. Dr. Hamer (London) reports: "There is no doubt a seasonal influence; thus it is known that in spring children remain almost stationary in weight while they increase in height, and it is therefore probable that any particular group examined in the spring term would show an excessive degree of malnutrition, just as nervous disorders, such as chorea, are more prevalent in this season of the year. Again, there is an age factor. During certain years growth in height is much more rapid than in the years that precede or follow, and many observers have noted the tendency to loss of energy and tone at these periods of growth. In a study of the causation of malnutrition made last year it was shown that rapid growth was confined to the leaver group as amongst school children."

The main contributions of the authorities to the cure of this condition appear to be the provision of regular and adequate meals, and in this one factor probably lies the great benefit of the open-air schools.

Tables are given showing the degree of nutrition in school children as revealed in the course of medical inspection in the areas of sixty-two local educational authorities. Some of the returns are distinctly perplexing. For example, one would have thought that a rural area like the county of the Isle of Wight would have presented a good record for fine plump children, but the returns are worse than for London; indeed, the percentage of children judged to suffer from bad nutrition is the second highest on the list, being 2.2 per cent. This is in strange conflict with another return from the same island county, which gives the incidence of cases of phthisis and other forms of tuberculosis as very low, the figures falling within the lowest group. Cases of conflicting returns such as these are not infrequent; they are probably susceptible of easy explanation, such as variation in the standard of judgement; but it would appear well worth the while of the Board to inquire as to their meaning.

(To be continued.)

ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the Committee, held on December 14th, 1915, 46 cases were considered, and £448 granted to 40 of the applicants. The following is a summary of the cases relieved:

Widow, aged 41, of L.R.C.P.Edin. who practised at Edmonton, and died in 1910. At husband's death applicant was left practically unprovided for, with two children now aged 8 and 10 years. Has managed to earn a living until the war commenced by literary work. Has friends in Los Angeles who recommend her to go there, as the prospects look good for herself and children. Help required towards her passage, etc. The Fund granted £20, and the Guild also provided clothes. The Professional Classes War Relief Council co-operated with the Fund and made a grant of £10.

Daughter, aged 27, of L.R.C.P.Irel. who practised in Ireland, and died in 1895. Applicant's health was undermined through the long nursing of her mother who has recently died. The Fund made a small grant a little time ago to enable her to take a short holiday. A further grant of £2 was made.

Widow, aged 45, of M.R.C.S.Eng. who practised at Gravesend, and died in January, 1915. Applicant was left with three daughters, aged 13 to 21, and one son, aged 20, who is abroad and whose health has broken down. Applicant required a little help towards the education of the daughters to earn their own living. Owing to the war it was impossible to sell the practice to advantage at present. Applicant voted £10 and the case referred to the Guild with a view of helping with the education of the girls.

Daughters, aged 62 and twins 45, of M.D.Edin. who practised in London, and died in 1873. Applicants' immediate trouble caused by the death of mother who had a life interest in some property. They endeavour to make a living by taking in paying guests and doing needlework, but have not been very successful of late. Voted £10 and referred to the Guild.

Daughter, aged 44, of M.R.C.S.Eng. who practised in South Wales, and died in 1872. She was brought up by friends and when able to work managed to earn a living as a laundress, but recently has developed cancer which has quite incapacitated her from working. Voted £12 in twelve instalments, and referred to the Guild.

Widow, aged 45, of M.R.C.S.Eng. who practised at Beccles, where he had only recently established himself, and died in January, 1915. Applicant is trying to earn a living by taking in paying guests, but owing to some extent to her house being near the East Coast, she has not been very successful, but has prospects of improvement. Voted £10.

Daughter, aged 58, of M.D.Dub. who practised in the Isle of Man, and died in 1882. Applicant's money was badly invested, and she lost all; she is now an invalid suffering from rheumatoid arthritis. She is highly recommended by the Liverpool branch of the Guild. Voted £5 through the Liverpool branch of the Guild.

(To be continued.)

British Medical Journal.

SATURDAY, JANUARY 8TH, 1916.

ENROLMENT.

THE publication of Lord Derby's report has intensified the general interest taken in his scheme of attestation, and members of the medical profession who have not followed the relation of the profession to a scheme which may prove to have paved the way for a compulsory military service will desire to know as precisely as possible the present position as it is viewed by the Central Medical War Committee. That Committee is in close conference with the Medical Department of the army, and has now worked out the whole system of recruiting of officers for the R.A.M.C.

The Central Medical War Committee is at present completing a list of all medical men of military age (that is to say, all of 45 years of age or under) who have not yet received commissions. It fully recognizes the need for taking into consideration local and individual difficulties, and is in communication with the local Medical War Committees who are preparing lists of medical men of military age for each area, classified according to the scheme published in the SUPPLEMENT to the JOURNAL of December 11th, 1915, p. 214. As these local lists are completed a communication will be addressed to each medical practitioner of military age asking him to fill up a form, giving his name, age, qualifications and other personal particulars, and another form authorizing the Central Medical War Committee to forward to the War Office his application for a temporary commission R.A.M.C. so soon as in the opinion of that Committee the time has arrived when his services should be placed at the disposal of the military authorities, the Committee on its part undertaking to give him at least one month's notice. On receipt of this form of application for a commission the Committee will at once send him a certificate of enrolment, stating that the application has been received and is duly registered with the Committee. This form of enrolment is equivalent to attestation under the Derby scheme. The scheme of the Committee applies only to men who are willing to give their whole time, and it is assumed that every fit man will be prepared to make this sacrifice.

It should be clearly understood that the application of the individual practitioner for a commission, which, according to the scheme, will be in the hands of the Central Medical War Committee, will not be sent in until all his circumstances have been fully considered. This consideration will include the individual's responsibilities with regard to persons dependent upon him, and to partners, institutions, or public authorities. With regard to the general interests of the country it will include the proportion which medical men who remain in practice in the area bears to the needs of the general population, and every means will be taken to equalize the call throughout the country.

It is not possible to mention any number as the total of medical men who will be required by the army within a stated time; this must depend partly upon the development of military operations and partly upon the amount of wastage among medical men already serving in the army. The understanding is that when the Army Medical Department needs more medical officers it will state the number required to the Central Medical War Committee; that Committee will then inspect the whole list of enrolled men and will select those who, from the information in the possession of the local Medical War Committees and the general information as to the whole country in the possession of the Central Medical War Committee, can be withdrawn from civil practice with least disadvantage to the public, to their brother practitioners, and to themselves.

As has been observed on previous occasions, there are residential areas where the proportion of medical men in civil practice is very much higher than in industrial districts, and it is certain that further calls must be made upon men practising in such areas. The public must understand that the conditions under which they have been accustomed in time of peace to obtain the attendance of their medical men cannot continue without modification; customs which have long prevailed in residential districts must be modified. In cases of sudden serious illness it will, of course, still be necessary to send for the doctor, but a great deal of his time could be saved without loss to the patient if well-to-do people who can get about easily would form the habit of going to see their doctor instead of requiring him to go and see them. Moreover, the amount of time commonly involved in paying a visit to a house may be materially curtailed without any real loss to the patient and with great saving of the doctor's time. On the other hand, it should be clearly understood that the scheme under which doctors are now invited to enrol with the Committee presents very great advantages from their point of view; they will engage under the conditions which have prevailed since the beginning of the war, that is to say, the commission they promise to accept will be for a year, at the end of which time they will be able to review the position. If the opportunity is lost and compulsion has to be faced, it is possible that the whole medical profession will be practically converted into a State service; compulsion on the individual will not then be limited in time, but he will be required to serve at least for the duration of the war. Thus it is of the utmost importance that every medical man of military age should sign the application submitted to him. Those who hold back are not unlikely to bring the whole of their medical brethren within measurable distance of a form of compulsion disastrous to the profession.

A Commission appointed at the instance of the Ministry of Munitions to inquire into labour conditions in the munitions factories of France has reported among its conclusions that the people of France realize that they are at war, and that the one idea in the mind of all is to bring the war to a successful issue. The result of their mission, they state, has been to convince them that the increase of the production of munitions in France is due to one cause, and one cause only, and that is the patriotic enthusiasm which exists there. These are not the conclusions of doctrinaires, but of practical men—among others, the chairman of the Amalgamated Society of Engineers and the secretary of the Engineering Employers' Federation.

Some light is thrown on the question how far the people of this country realize that they are at war by Lord Derby's report on the result of his effort as Director-General of Recruiting, published as a white paper on January 4th; it consisted of three parts, but

the first and third parts only are published, the second having been put out of date by the great influx during the last few days on which enlistment under the group system was open. The first part, giving a general account of the scheme and what was done under it, has, Lord Derby states, the unanimous assent of his colleagues on the Joint Committee, formed of the Parliamentary Recruiting Committee and the Joint Labour Recruiting Committee; but for the third and more objective part, which involves a number of calculations and the estimate of deductions which must be made, Lord Derby is responsible, although in the compilation of the statistics he has had the assistance of Dr. T. H. C. Stevenson, Superintendent of Statistics at the General Register Office. From the crude total figures for the period from October 11th, when Lord Derby was appointed, to December 15th, it appears that 2,950,514 men came forward and either attested in groups or enlisted immediately into the army; the latter numbered rather over a quarter of a million, but of the large total nearly half a million (428,853) have already been definitely rejected on medical grounds. For comparison we may quote the figures for Australia given in a recent telegram to the *Times*, from which it appears that of the 1,224,162 males between the ages 18 and 60 registered in Australia, 775,419 (63.34 per cent.) have been classed as fit, 380,232 (31.06 per cent.) as doubtful, and 68,511 (5.6 per cent.) as unfit. The number of fit men between the ages of 18 and 34 is 422,814.

It is stated that of the remainder who have attested in this country nearly a million (925,445) have not yet been medically examined. In the analysis of the single men and married men attested, the deduction made for the number of men likely to be found unfit on medical examination is 40 per cent. This is one reason why Lord Derby says that the figures on analysis do not prove as satisfactory as could have been wished. His general conclusion is that there are 651,160 unstarred single men unaccounted for in Great Britain.

The bill to make provision with respect to military service in connexion with the present war, introduced by the Prime Minister on January 5th, follows the general lines of Lord Derby's scheme, but introduces the principle of compulsion in respect of unmarried men and widowers without children dependent upon them. The voluntary attestation system, however, remains open, and though, under the scheme outlined above, it does not directly affect medical men, it may be well to add, with regard to the working of the local and central tribunals under it, that all claims sent to the local tribunal are forwarded at once to the recruiting officer or the military representative, who has the assistance of an advisory committee. The grounds on which the application is made are shown in the claim, which is considered by the military representative in consultation with his advisory committee. Necessary inquiries into the accuracy of the statements set out by the claimant are made, and if the committee and the military representative are satisfied that the claim is reasonable, it is agreed to and returned to the local tribunal, and in this case no formal proceedings take place before that tribunal, the claimant being simply informed that his claim has been assented to. Should the advisory committee and the military representative after inquiry consider that the claim is one which requires to be dealt with judicially by the local tribunal—that is, by a hearing of the claimant and of other necessary witnesses—the claim is sent to the local tribunal to be so dealt with. The advisory committee will not require the claimant to appear before it, as that committee is not a court, but there is no objection to its interviewing a claimant who wishes to attend in order that he may informally explain his case to the committee. There is an appeal to the central body set up under the authority of Lord Lansdowne's committee. The bill proposes to continue the local tribunal, though it is not certain that the advisory committee will be continued, and also the central appeal body, but it introduces an intermediate appeal tribunal nominated by the Government for areas larger than those covered by the local tribunal.

INFANT LIFE PRESERVATION.

There is abundant evidence that the public is at last beginning to view with anxiety the enormous wastage of infant life and to realize that a considerable proportion of this loss is preventable. The subject has been discussed by writers in the medical press in all countries, but especially in this country, in France, and in America, for the last ten or twelve years, until the facts and figures have become very familiar to the medical profession. Through it the public has become interested, and in England, Scotland, and Ireland lay organizations exist which are endeavouring with more or less success to force the question on public attention. Infant consultations have been established in many centres throughout the country, particularly in the large towns, and the good effects of their system of regular medical inspection and weighing of infants, and of the education of mothers by informal "health talks" and home visiting, have been apparent in the improvement of the infant mortality-rate before the war. That so much success has been achieved is a standing testimonial to voluntary effort, but grants have also been forthcoming from the Board of Education, from the Local Government Board, and, in some instances, from the local municipal authorities.

These efforts following on the awakening of the public conscience may be abortive if the municipal authorities are not alive to their responsibilities in this direction. In many localities medical officers of health have met voluntary workers half way, and have used their influence to enlist the support of the local authority; in others—notably, we understand, in some of the poorest and most crowded districts—their attitude has been far from sympathetic. The work is too important and too urgent to be subjected to such vicissitudes of fortune. It has never been more urgent than at present. Out of every 800,000 children born alive we lose approximately 114,000 in the first year of life; to this must be added the number of infants lost by death of the fetus during the forty weeks of antenatal life, estimated by Dr. Newsholme as 138,249 during 1914 in England and Wales.

With such figures before us, it does not seem too much to hope that the favour with which infant welfare and maternity centres are regarded by the Government will be better reflected by the legislature. Further, though under the Notification of Births Act the names and addresses of the mothers of the babies are available, full advantage cannot be taken of this knowledge without the co-operation of the medical officers of health. Maternity or infant welfare centres should know from what source or sources they can confidently expect a grant or grants to cover their expenses, provided that they attain a certain definite standard of efficiency. At present this point is often obscure, for three bodies are implicated — the Board of Education, the Local

Government Board, and the local municipal authority. The support of the latter is often problematical, and if obtained, being temporary, is unstable. The management committees of the centres, although the work done may be consistently good, feel that their prospects of continuing from one year to another is altogether on the knees of the gods.

The establishment of crèches for the babies of those mothers who go out to work is germane to the subject. Many such crèches are already in existence, and an appeal was made recently for one which it was proposed to establish in Notting Hill for the babies of mothers who are engaged on Government contracts. It is proposed that the crèche shall be established near the homes of the mothers. Such an undertaking deserves encouragement, and may be the best that can be devised in the present emergency, but it is open to question whether its value would not be enhanced if it were situated near to the mothers' place of work rather than to their homes. In judicious breast-feeding lies the key to the prevention of many infant deaths. If the crèche be situated close to the factory, the baby can receive a breast-feed during the dinner hour, and, with a little ingenuity, arrangements could be made whereby artificial feeding might be unnecessary; on the other hand, if the mothers leave their infants in a crèche near their own homes and go out to work for the day, artificial feeding, with its attendant dangers and disabilities, is a necessary consequence. The appeal states that "a project is on foot to form after the war a permanent crèche on a much larger scale." Such a statement evokes two criticisms apart from that already expressed. In the first place, the establishment of crèches is not one of those many projects which can profitably be deferred until after the war. The need will never be more pressing than it is to-day. The other criticism concerns the advisability of forming "large" crèches. One of the arguments which, with some reason, has often been urged against these institutions is that they are liable to become potent centres for the dissemination, not only of exanthemata, but of other epidemic disorders of infancy. With large crèches this danger would be increasingly difficult to control. Again, a large crèche, unless it be situated within or near a large factory, implies that many babies will unnecessarily be deprived of human milk.

BRITISH RED CROSS WORK.

WHEN war broke out there were two national organizations for bringing voluntary help to wounded and sick soldiers and sailors—the British Red Cross Society and the St. John Ambulance Association. The latter was one of the principal departments in the Order of St. John of Jerusalem in England, and had established the St. John Ambulance Brigade, which had done excellent work in South Africa, and also in civil life. The British Red Cross Society, which had been preceded by the National Aid Society, was incorporated in 1908, with King Edward VII as patron. It received the official recognition of the Admiralty and War Office as the organization responsible for the Red Cross movement throughout the Empire; at the same time, both the Admiralty and the War Office agreed that in time of war they would receive voluntary offers of assistance made in Great Britain and Ireland only through the society, except those in respect of the supply of personnel from the St. John Ambulance and the St. Andrew's Ambulance Association. The main object of the British Red Cross Society was then defined to be the examination, systemization, and co-ordination of all offers of help, so that, by the prevention of waste and overlapping, they should be given their greatest possible value.

The similarity of the work proposed to be done by the British Red Cross Society and the St. John Ambulance Association caused certain risk of overlapping and led apparently to some little friction. A War Office Committee was therefore appointed to inquire into the relations between the two organizations, and held its first meeting in July, 1914. When, however, the war began to make urgent calls upon the energies of both, a shorter way was found, and an amicable arrangement was reached which took effect from October 20th, 1914. The joint War Committee of the two bodies was formed with the Honourable Arthur Stanley, M.P., of the British Red Cross Society, as chairman, and Sir H. C. Perrott, Bt., of the Order of St. John, as vice-chairman, while Sir Frederick Treves of the former society and Mr. Edmund Owen of the latter made themselves responsible for the selection of personnel and many other matters which fall to be decided on medical authority. The co-operation immediately commanded the approval of the public, as is shown by the fact that during the first year of the joint working of the two organizations donations of the public amounted to £1,864,036.

The Joint Finance Committee of the two bodies, of which Sir Robert Hudson is chairman, has recently issued a very full statement of accounts for the year ending October 20th, 1915. The Joint Committee, in addition to what it has done in respect of the transport of wounded, has maintained or helped hospitals in France and Flanders, in Malta, and the Near East, in Africa, and in England. The total sum expended during the year was £1,642,271 6s. 5d., leaving balances in hand amounting to £221,764 17s. 7d. The use of the plural is due to the fact that about half the contributions received were ear-marked by the donors for particular classes of work, and in particular to the fund for the transport of wounded, to which more than half a million was contributed. The Finance Committee pleads that its work would be simplified if a larger proportion of the donations were sent to the general fund, since, while some of the special funds have considerable unused balances, others have had to be heavily supplemented from the general fund.

The largest single item of expenditure is for the transport of wounded. Large as was the sum contributed to it, this fund was overdrawn to the amount of nearly £62,000. The overdraft is attributed to the fact that, in order to secure delivery when wanted, it was necessary to place orders for motor ambulance cars many months ahead. The coal owners and coal workers have undertaken to supply the whole of the overdraft, and indeed much more, for the work of the motor convoys. The sum expended on the purchase of motor ambulances was £446,400, and the cost of working and maintaining them was £169,562. By far the greater part of the fleet has been working in France and Flanders, but cars were maintained also in Egypt, Malta, Serbia, Italy, and Great Britain. The number of ambulance cars is 897, but the total number of cars in use is raised to 1,245 by the repair wagons necessary, and by lorries, soup kitchens, and touring cars; in addition there are 56 motor cycles. The Committee has also two ambulance launches, three petrol ambulance launches, and an iron lighter punt working in the Mediterranean, three petrol ambulance launches working in the Persian Gulf, and

a steamer of 150 tons used for carrying Red Cross stores from Alexandria to the Dardanelles. This steamer and the three petrol launches used in the Mediterranean were presented to the Committee, which has had, however, to bear the cost of alterations and upkeep. The four hospital trains cost in round figures £44,000; one of these was converted at the cost of £4,000; the average cost of the other three was about £13,000. It should be added that the whole of the capital outlay on motor ambulances, hospital equipment, trains, etc., has been charged against the income of the year.

The value of the goods purchased or given during the year was £463,455 11s. 4d. The estimated value of goods in kind represent 43 per cent., and the majority were received in comparatively small quantities, and had to be unpacked, sorted, sized, and repacked. The fact that the management expenses only amounted to 2.96 per cent. of the value of the stores handled was due in part to the number of voluntary helpers. The joint management expenses estimated on the whole fund amounted to 2¾d. in £, or if the cost of appeals be added, to 3½d. in the £. This is due again partly to the number of voluntary workers and partly to the fact that owing to the generosity of the Royal Automobile Club and Lord Michelham, the expenditure on rents, rates, etc., did not amount to £25. Heavy expenditure has been entailed by the establishment and maintenance of the St. John Hospital at Étaples, the British Red Cross Hospital at Netley, and the King George Hospital in London. Contributions have also been made to the base hospital at Nairobi, and the Cameroons Field Hospital for the wounded of the North-eastern Rhodesian Field Force, and to the Anglo-Russian Hospital, as well as for the benefit of sailors and soldiers who have been crippled or blinded.

PROPOSED COLLEGE OF NURSING.

THE Hon. Arthur Stanley, M.P., who has been acting as the chairman of a committee of matrons and managers of some London hospitals, has addressed a letter to hospital committees containing a proposal for the establishment of a college of nursing, to regulate the courses of study and technical training for nurses and to form an examination board. Mr. Stanley states that during his year's work as chairman of the Joint War Committee of the British Red Cross Society and the Order of St. John he has been struck by the lack of organization amongst the various authorities responsible for the training of nurses, and by the need for organization among the nurses themselves. He observes that the more or less active agitation which has been going on for something like twenty-five years in favour of the registration of trained nurses has hitherto failed to attain the object sought. Assuming that something should be done at once to co-ordinate the various interests involved, he thinks that without prejudice to ultimate developments, whether by legislation or otherwise, it will be necessary to rely, for the time at least, upon a voluntary scheme of co-operation among the nurse-training schools throughout the country. The college he proposes would be a purely voluntary body, which would aim at securing the support and sympathy of the governors of hospitals to which nurse-training schools are attached, of the matrons and lecturers at these nurse-training schools, of the leading members of the medical profession, and of the trained nurses themselves. For the promoters of the college he would look to persons belonging to the several classes enumerated, and he suggests that, having obtained the sanction of the Board of Trade to the registration of the college with its memorandum and articles of association, they should appoint the first council of management, two-thirds of whom should be matrons of hospitals or superintendents of nursing. For effective administration this council must, he considers, be small, and it is proposed therefore that it should form a large consultative board, drawn from all classes of nurse-training schools and nursing associations, and from nurses in practice throughout the country, and that the council should always invite and receive a report from this consultative board before coming to a determination either upon courses of study and technical training, or upon the conditions under which recognition should be extended to nurses' schools. It should also form an examination board to advise upon the appointment of examiners, the scheme for examinations, and the acceptance, under safeguards, of internal examinations in recognized training schools to qualify for the certificate of proficiency in nursing which would be granted by the college. The college should also take power, it is suggested, to exercise similar functions in all branches of women's work connected with hospitals, whether naval, military, or civil, and to give certificates of proficiency to those who pass the necessary examinations. Mr. Stanley adds that he has reason to hope that, should these proposals meet with sympathetic support, he may be able to secure financial assistance to launch the college in a suitable building. He invites the committee of each hospital addressed to nominate representatives to take part in the establishment and development of the college.

PROFESSOR METCHNIKOFF ON DEATH.

PROFESSOR ÉLIE METCHNIKOFF of the Pasteur Institute at Paris celebrated his seventieth birthday last May. The occasion was marked by quiet commemoration and the reunion of friends, while the professor himself, with characteristic spirit, delivered an address[1] on the subject of "Death." As he pointed out, the age of seventy was generally recognized as the natural limit of normal life. In his own family death came earlier, and he attributed his survival to the hygienic regimen by which he lived. As is well known, Professor Metchnikoff holds that the normal bacterial flora of the alimentary tract is actively harmful to man, and he proposes to secure longevity by abstention from uncooked food, and the sedulous cultivation of relatively harmless microbes, notably those of the lactic acid fermentation of milk, in the intestine. He calls for the study of "scientific macrobiotics," or the science of long life, suggesting that it should be begun on the inhabitants of homes for the aged. When the problems of rational macrobiotics are better understood, the professor expects to see a keener desire to live manifested by old people, for they will then arrive at old age with their faculties less impaired than is at present usually the case. In a later contribution[2] to thanatology, the science of death, Professor Metchnikoff examines the causes that lead the imago of *Bombyx mori*, the Southern European silkworm moth, to die a natural death after but two or three weeks of life. This is a moth without the suctorial apparatus necessary for feeding, and so it lives and dies without taking food. Its digestive tract is incapable of ingesting or absorbing nutriment; indeed, it is a poor thing that serves only for the ejection of a drop of transparent alkaline fluid that softens the cocoon and permits the moth to escape. Hence the imago would appear to be designed for a short life only, and its death should therefore be a truly natural death in most cases. Professor Metchnikoff, having reached this general conclusion, proceeded to investigate the actual causes of death in a number of cases. The stomach and tissues were found to be sterile in three-quarters of 115 silkworm moths examined after natural death; the remainder showed infection with diplococci or moulds that may well have been the immediate cause of death. May not some

[1] *Ann. Inst. Pasteur*, Paris, 1915, xxix, 364
[2] Ibid., 477.

invisible filterable virus have been present in the apparently sterile majority, and the cause of their death? To this question no definite answer can be given at present, for want of adequate means of investigation; the professor leaves it open, and attaches some importance to its solution. Is mere starvation to be set down as the cause of death? Apparently not, for the bodies of the moths always contain after death a quantity of unused fat, even when life has been unusually prolonged; this residual fat is less in the females than the males, being exhausted by ovulation, yet the females live a little longer than the males as a rule. Is death caused by some exhaustion of the muscular or nervous tissue, such as may be demonstrated under the microscope? No, for the muscle fibres preserve their normal histological structure after death, the nerve cells present no abnormal pigmentation or vacuolation; it has been noted that some of the tissues—for example, the heart and the spermatozoa—may survive the natural death of the moth for many hours. Finally, uraemia and anuria come up for consideration; does the normal silkworm moth succumb to an anuric toxaemia? No, once more. Micturition is always observed soon after the moth has left the cocoon, and may be repeated for a day or two, or even after a week or more in exceptional cases, but anuria during the greater part of life is the rule. Yet this anuria depends only on suppression of micturition, and the bladder is found after death to be distended with fluid and uratic deposits; the moth's Malpighian tubules are active during life. This urine is undoubtedly highly toxic to silkworms, silkworm moths, and mice, on subcutaneous injection. Hence Professor Metchnikoff is unable to exclude uraemia as a cause of the natural death of these moths, although he is far from asserting that the one is the cause of the other; the question is one demanding further investigation on the lines of pathological chemistry. He entirely disagrees with Marinesco's attribution of old age and death to dehydration of the colloids in the tissues, which is, indeed, an admirable example of the *obscurum per obscurius* to which men of science are so unfortunately prone. And he is inclined to believe with Bloch that death in human beings is never natural, properly speaking, but is always precipitated by the intrusion of some avoidable factor, whether from within or from without. For himself, Professor Metchnikoff tells us, he regards intestinal infection as the most redoubtable of these factors, and he adds that for eighteeen years he has done his best to neutralize its injurious effects by due attention to his intestinal flora. We wish him all possible success in the long continuance of his efforts in this direction!

VACCINE THERAPY IN ENTERIC FEVER.

USING the vaccine employed prophylactically in the Italian army, Dr. A. Fagiuoli has recently recorded[1] a small number of cases of enteric fever in which the disease has been cut short and has ended by crisis after the intravenous injection of from 100 to 300 million of the bacteria, the dose for prophylactic purposes being 400 million. No details as to the method of preparation of this vaccine are given, but Dr. Fagiuoli sees no reason for believing that an autogenous vaccine would give better results. He has never seen any harm result from the use of the intravenous method of administration; the injection is followed in a few minutes, or at any rate within an hour, by a rigor and a sharp rise of temperature to 105° or 106° F. The temperature falls eight or nine degrees within twenty-four hours, with profuse diaphoresis, and the patient becomes convalescent. The best dose of antityphoid vaccine to give can only be determined empirically; Dr. Fagiuoli began with 150 million bacteria, but found that with this amount a second injection a few days later might be necessitated by a recrudescence of the fever, and he now prefers to give up to 300 million bacteria. He has not met with any case of cardiac failure or arrhythmia as a result of the treatment, or with any unpleasant symptoms that could be attributed to it. For the rest, the patients are treated on the general lines that ordinarily obtain. A case of paratyphoid B fever is quoted in which the antityphoid vaccine (200 million) produced an equally satisfactory and rapid cure on the eighteenth day of the disease; and a case of typhoid fever of severe type cured by the intravenous injection of 100 million *B. coli* vaccine on the twentieth day. No explanation of these anomalous cures is offered; the author notes that in two of the cases of typhoid fever treated successfully the characteristic leucopenia was replaced by a slight leucocytosis a few days after the injection. Dr. Fagiuoli has had some success in the treatment of Malta fever and tuberculosis of the lungs by intravenous injections of starch, a substance he supposes to act by developing anaphylotoxins. He gives 5 c.cm. or 10 c.cm. of a 5 per cent. solution of Kahlbaum's starch, and he quotes two cases of enteric fever in which a series of four such injections appeared to shorten the course of the disease. Some light on the question how injections of antityphoid vaccine may cut short enteric fever is thrown by Dr. F. P. Gay, who notes[2] that the treatment of enteric patients with a modified sensitized antityphoid vaccine produces a specific leucocytosis, mainly polymorphonuclear, the count rising as high as 20,000 or 40,000 white cells per cubic millimetre. In addition, he finds that the treatment develops a high agglutinating power in the patient's serum, no doubt an index of the development of some substance antagonistic to the *Bacillus typhosus*. The dose of vaccine he advocates contains about 300 million bacteria.

[1] *Il Morgagni*, Milan, 1915, lvii, Archiv., 361.

ETHER ANAESTHESIA.

IN the BRITISH MEDICAL JOURNAL of May 29th, 1915 (p. 939), the question of priority in the introduction of ether anaesthesia into surgical practice was discussed, and the claim advanced on behalf of Dr. Crawford Williamson Long was admitted. At the same time it was pointed out that it was William Thomas Green Morton who compelled the attention of the medical world to the value of ether as an anaesthetic, and that to him, therefore, belongs the glory of the discovery. An interesting note on Long appeared in the *Journal of the American Medical Association* of October 30th, 1915, in which it is stated that Dr. Allen J. Smith has recently published in facsimile the documentary evidence relating to his work. Altogether, says our contemporary, there are eleven pages of photographic reproductions of letters and attestations of various kinds, including Long's statement of account with James Venable, from the back of whose neck he removed one of two small wens under ether on March 30th, 1842. The understanding was that if this operation was painless the other growth should be dealt with in the same way. This was done on June 6th, a fact which implies that the ether had been successful on the former occasion. It has been suggested, by ourselves as well as by others, that Long did not appreciate the importance of his discovery. The documents published by Dr. Allen J. Smith, however, prove that he continued to use ether, although he failed to convince his professional brethren of its value. Mr. George Foy, of Dublin, writes to point out that the centenary of Long's birth fell on November 4th. Mr. Foy also quotes an unpublished letter written by Long to his friend Dr. L. A. Dugas, Augusta, Ga., in which he states that his mind had early been directed to the fact that persons while etherized were insensible to pain from falls and injuries. Long's grandfather emigrated from the neighbourhood of Letterkenny, not far from Sligo, the birthplace of William Higgins, who predicted that the ethyl series of alkyls would furnish an anaesthetic.

[2] *Journ. Amer. Med. Assoc.*, Chicago, 1915, lxv, 322.

NERVE DEAFNESS AND MUMPS.

ATTENTION is drawn by Dr. Hubbard[1] to the fact that nerve deafness after mumps is by no means so rare as perusal of the current textbooks would lead the reader to imagine. Mumps is given as the cause of nerve deafness in from 3 to 5 per cent. of deaf-mutes. Dr. Hubbard states that there are about 50,000 deaf-mutes in the United States of America, of whom perhaps 2,000 owe their disability to mumps. In fact, mumps ranks close to scarlatina as a cause of absolute bilateral deafness, and probably the percentage due to mumps is still higher where unilateral nerve deafness is considered. The subject is, therefore, one of no little clinical and social importance. It is disappointing to find that the pathological anatomy of this form of deafness has been little studied; it is vaguely attributed to labyrinthitis, and the labyrinthitis is set down as a metastatic infection with the microbial virus of mumps, which may well be the virus described by Dr. M. H. Gordon[2] as capable of passing through a Berkefeld filter, and as the cause of acute lymphocytic meningitis when injected into the monkey. Others hold that ear trouble in mumps is due to the extension of the inflammatory process along the Eustachian tube. Be that as it may, auditory symptoms may occur at any stage of mumps, even before the parotid swelling appears; they consist of tinnitus, variable degrees of deafness, vertigo, nausea, vomiting, disturbances of equilibration, and headache. Naturally the cases vary very widely in severity; in some there remains no more than a slight impairment of the hearing, in others there are islands of tone perception in certain registers, while in yet others there may be complete deafness in one or both ears. In Dr. Hubbard's own cases he noted that the destruction of both cochlear and vestibular nerve functions might be complete or partial, making possible some degree of restoration of function. He draws the important practical conclusion that the evil effects of the labyrinthitis are due to the fact that there is no room for inflammatory products within the rigid labyrinthine cage; increased tension of the endolymph and perilymph rapidly injures and destroys such delicately balanced structures as the organ of Corti, the thin membranous partitions, and the terminal vestibular fibres. He regards the present treatment of the aural complications of mumps as unsatisfactory, and suggests that lumbar puncture should be given a trial, because lowering of the subarachnoid tension may lower the tension of the perilymph. Alternatively, Dr. Hubbard calls for a method of applying modern surgical decompression to the labyrinth capsule—an operation, one would say, demanding no little delicacy of touch on the part of the operating surgeon.

MEDICAL TERMS IN THE NEW ENGLISH DICTIONARY.

THE current issue of the *New English Dictionary* (a single section) carries the alphabetical rubrics from *Subterraneously* to *Sullen*, and has been under the immediate care of Mr. C. T. Onions, one of the three lexicographers who now, since the death of Sir James Murray, edit this great work, national in nature if not in name. The first medical or rather semi-medical term met with in this instalment is *subventaneous*, with its meaning of "windy," and its application to conceptions and to eggs. "Subventaneous eggs," wrote Holme in his *Armoury* (1688), "are such as the Hen brings forth without the Treading of the Cock," and some forty years earlier Sir Thomas Browne had referred in his *Vulgar Errors* to "the Mares in Spaine and their subventaneous conceptions from the westerne winde." One does not think of *subversion* as in any sense a medical term, but once upon a time (Mr. Onions tells) *subversion of the stomach* signified nausea, and Crooke in his *Body of Man* (1615) wrote of "the great consent betweene the stomacke and the kidneyes, and the subversion of the stomacke and frequent vomits." The verb *subvert* was also used in the sense of to upset the stomach (as one would say now), and Venner (in 1620) warned the readers of his *Via Recta* against "the sweet Orenges which are not fit for sauce, because they subvert the appetite, and cause loathsomnesse in the stomacke." The anatomical term *subvertebral* and the embryological *subzonal* are both faithfully entered and correctly defined, and the latter is illustrated by two quotations from Sir William Turner's work on *Human Anatomy* (1877). Most interesting paragraphs are devoted to *succedaneal*, *succedaneous*, and *succedaneum*, meaning acting as a substitute and a substitute. In the seventeenth century medicinal applications and ingredients were called *succedaneous*, as in the illustrative quotation (of 1657) which declares that "by succedaneous secrets the same diseases may be restored, although not with the same speed or universality." *Succedaneum*, the noun, has the special medical significance of "a drug, frequently of inferior efficacy, substituted for another"; and one remembers that the practice of using succedanea is obsolete at the present time, although "substitution" is not unknown. One of the illustrative quotations is from Fuller (famed for his *Worthies* and his wit) and reads: "Physicians have their Succedanea, or Seconds, which well supply the place of such Simples, which the patient cannot procure." The obstetrician will, perhaps, find fault with the makers of the *New English Dictionary* for not including his often-employed term *caput succedaneum* either here or under *caput*, but they will possibly put up the plea of non-naturalization. Among the quotations Carlyle's famous phrase, which has again some added significance in these days, is not omitted: "Paper, which in many ways is the succedaneum of gold." The obstetrician possibly will again grumble because Mr. Onions has not referred to the *succenturiate* placenta (so troublesome sometimes and so elusive), especially as he has made mention of the suprarenal capsules as the "*succenturiate kidneys*," a much less frequent use of the word. A number of medical terms appear under *succin-*, including *succinic*, *succinite*, *succinol*, and *succinyl*, and *succus* is not forgotten. Special uses of *sucking* are exhaustively catalogued, even the *sucking pads*, the lobulated masses of fat occupying the space between the masseter and the buccinator muscles, being named and defined. "*Sudden stroke*," too, a synonym of apoplexy, is not missed. Other medical words are *sudamina*, *sudoral*, *sudoresis*, *sudoriferous*, *sudorific*, *sudoriparous*, *sufflation*, *suffumigation*, *suggilation*, *sulculus*, and *sulcus*; and the medical usage of *suffer*, *sufferer*, *suggest*, and *suggestion* is carefully recorded. Apart from its medical aspects, the *Dictionary* is no less complete.

A MEDICAL OFFICER VINDICATED.

THE Walsall and West Bromwich Unions Joint Committee and other related bodies have an institution at Great Barr Park. It at present accommodates about 100 children and the staff, but buildings are now nearing completion for about 250 mental patients. Miss Anna Sinclair was appointed matron of Great Barr Hall on August 9th, 1912, and it had been proposed to appoint a resident medical superintendent and an assistant medical officer, but, owing to the war, these appointments were deferred, and Dr. W. Maule Smith was appointed non-resident medical superintendent in October, 1914, and commenced his duties on January 1st, 1915. On October 12th, 1915, the committee interviewed Miss Sinclair, and afterwards directed its clerk to inform her that unless she sent in her resignation her appointment would be terminated. The resignation was not received, and on October 21st notice to terminate the appointment was given to Miss Sinclair. On November 1st Miss Sinclair sent a letter to each member of the committee making grave charges and general allegations against Dr. Maule Smith, and asking

[1] T. Hubbard, *Trans. Amer. Otological Soc.*, xiii, Part 3. New Bedford, Mass., 1915.
[2] BRITISH MEDICAL JOURNAL, 1914, i, p. 1413.

for an investigation at the meeting of the committee on the following day. The committee unanimously decided to ask the Local Government Board to hold an inquiry. The Board instructed the committee to hold the investigation itself. After some correspondence with Miss Sinclair's solicitor, Mr. Durby, the committtee permitted him to appear on her behalf at the inquiry, and to make a statement in her absence. Dr. Smith was present at the inquiry, and was represented by Mr. W. E. Hempson. The proceedings extended over three days, and eleven witnesses were heard. The committee has furnished us with a report of its investigation, in which the charges against Dr. Smith are set out, and the findings of the committee thereon stated. It suffices for us to say that the committee's report states as follows: "We have no hesitation in entirely exonerating Dr. Smith from all the charges and insinuations made against him by Miss Sinclair." We desire to offer our congratulations to Dr. Maule Smith and the Medical Defence Union, on whose instructions Mr. Hempson represented him, upon this complete vindication of his professional honour and reputation.

RAILWAYS IN WAR.

NAPOLEON, a man who had the virtue of knowing his own mind and not hesitating to express it, said he preferred a dead soldier to a wounded one. How far would he have modified this unsympathetic attitude of mind if he had had all our modern railways and railway ambulance transport to serve his ambitions? The question is one that is discussed very fully, though indirectly, in a book Mr. Edwin A. Pratt[1] has published recently. He gives a most interesting historical account of the influence of railways in the conduct of warfare. Great Britain is a country devoid of strategical railways; our iron roads were built to serve commerce only. Germany, on the other hand, was already busy building "aggressive" railway lines aiming at France and Russia as long ago as 1842; with what success it is needless to point out now. These, however, are matters that do not directly concern us; but Mr. Pratt has a most interesting chapter on railway ambulance transport—a branch of railway work that has grown out of all knowledge since its crude beginnings in the Crimean war sixty years ago. The hospital train, it appears, was invented in the American War of Secession, 1861–65, and attained so high a degree of efficiency during the last eighteen months of that war as to be of high strategical as well as humanitarian value. Thus we are told that the provisions made for the wounded during this period were worth an army of 100,000 men to the Federal forces. Each train consisted of five ward cars, a surgeon's car, a dispensary car, an ordinary passenger car for the less serious cases to sit in, a kitchen car with dining-room and storeroom, and a conductor's car. The trains had distinguishing signals which were recognized by the Confederates, and none of them were ever fired on or molested in any way. *O si sic omnes!* Some of these cars were specially built for the purposes they served. They were warmed and lighted in winter, and special attention was devoted to their ventilation. Mr. Pratt gives an interesting account of the use made of hospital trains in the chief wars of the last fifty years, and of their steady improvement in design and effectiveness. Their most recent representatives have been on view in London, Edinburgh, and other large towns during the past year, and have been visited and admired by many of us who are non-combatants. The bulk of Mr. Pratt's book is occupied with the economic and strategic aspects of railway development all the world over. It is well written and well documented, and should be welcome to the many readers of the daily papers who are in process of becoming well-grounded students of politics at home and abroad.

[1] *The Rise of Rail-Power in War and Conquest, 1833–1914.* By E. A. Pratt; with a Bibliography. London: P. S. King and Son, Ltd. 1915. (Demy 8vo, pp. 417. 7s. 6d. net.)

SCIENCE AND ADVERTISING.

No sooner is a discovery made in medicine than it is greedily seized upon by enterprising "providers" as a text upon which to preach their wares, until, like an operatic air that has been adapted to the barrel organ, it soon becomes unspeakably hackneyed. What tons of paper have been printed over to the tune of Garrod's discovery of uric acid, to push the sale of preventives, solvents, and destroyers of that peccant substance, which is now recognized to be an incidental and comparatively harmless by-product of gouty proclivities! Ever since Lister made public his immortal discovery we have been overwhelmed with antiseptics—antiseptic drugs, antiseptic dressings, antiseptic garments—in fact, almost everything one can think of except antiseptic babies. Then came the era of intestinal antiseptics, "warranted to cure" in spite of the asseverations of physiological chemists of repute, who denied the possibility of a successful direct attack on hypothetical microbes in a canal lined by exquisitely sensitive cells. Metchnikoff introduced the conception of phagocytosis, and forthwith came a procession of drugs, ointments, and lotions to promote, facilitate, and, if need be, compel, leucocytes *qua* phagocytes to do their duty. Huchard, or some other inventive genius, suggested "demineralization of the tissues" as the underlying cause of weakened resistance to microbial attack, and lo! phosphates, hypophosphites, and glycerophosphates flooded the market, the fact being ignored that a spendthrift who is unable to keep his money in his pocket is unlikely to succeed in retaining money conferred upon him as a gift. Investigators have ascribed beri-beri and rickets, pellagra and scurvy to the absence of hypothetical substances in prepared and preserved foods. Every patent food worth mentioning is warranted to contain a surfeit of vitamines. Well might the cynical French professor exclaim, "Make haste to use the new remedy while yet it cures."

Medical Notes in Parliament.

War.

Naval and Military War Pensions Committee.—The Prime Minister on January 4th stated that the Prince of Wales had consented to act as chairman of the statutory committee set up by the Naval and Military War Pensions Act, and that the paid vice-chairman would be Mr. Cyril Jackson. The other members of the committee are as follows:

Major-General Sir Ivor Herbert, Bt., C.B., C.M.G., M.P.; Mr. A. A. Allen, M.P.; Sir Henry Craik, K.C.B., M.P.; Mr. C. J. Mathew; Sir W. Ryland Adkins, M.P.; Lord Cheylesmore, K.C.V.O.; the Right Hon. G. N. Barnes, M.P.; Mr. H. Gosling; Mrs. Sidney Webb; Miss Durham.

Six Nominees of the Royal Patriotic Corporation: The Right Hon W. Hayes Fisher, M.P.; Admiral Sir Wilmot H. Fawkes, G.C.B., K.C.V.O.; Mr. B. B. Cubitt; Mr. J. E. Rayner; the Countess Roberts; Mrs. McKenna.

Two Nominees of the Soldiers' and Sailors' Families Association: Lieutenant-Colonel Sir Donald Robertson, K.C.S.I.; the Countess of March.

Nominees of Government Offices: Treasury, Mr. H. E. Haward; Admiralty, Mr. C. M. Bruce; War Office, Lieutenant-General the Hon. Sir F. W. Stopford, K.C.M.G., K.C.V.O., C.B.; National Health Commissioners, Mr. D. J. Shackleton; Local Government Board, Sir S. B. Provis, K.C.B.; Local Government Board (Scotland), Sir R. Macleod, K.C.B.; Local Government Board (Ireland), Mr. C. H. O'Conor.

Men Temporarily Unfit.—Mr. Partington, on January 4th, asked whether, in view of the shortage of labour, men returned from active service and temporarily unfit for further service were allowed to return to civil life. Mr. Tennant said that men who are medically unfit for service abroad or at home, and who are not likely to become fit within six months, are discharged from the service; but men who are temporarily unfit are not discharged. He recognized the necessity of returning to civil life men no longer fit for military service, but it was necessary that the permanent unfitness should be conclusively established.

THE WAR.

WAR NEPHRITIS.

AT a meeting of the K.k. Gesellschaft der Aerzte[1] in Vienna the etiology of the serious outbreaks of nephritis which have occurred among soldiers was discussed by, among others, Professor A. Klein and Dr. Pulay. Their investigations had been carried out in the First Reserve Hospital and in the Serotherapeutic Institute in Vienna. A large number of cases of haemorrhagic nephritis observed in April and May were attributed to a variety of different causes, such as sore throats, slight undetected scarlatina, and "chills." It was also frequently suggested that inoculation against typhoid fever might have been responsible. The clinical picture was fairly uniform: slight fever and oedema, accompanied by headache and tiredness. The urine contained albumin and blood and casts of every shape. Polyuria, nocturnal incontinence, and signs of pyelitis, including leucocytes and mucus in the urine, were observed in many cases. In 25 *B. coli* was found in pure culture in the urine, and yet these micro-organisms were very seldom found in the urethra. It was suggested that the bacilli might have reached the kidneys by the lymphatic system or the blood, the bladder having escaped infection. It was further assumed that the thermal and mechanical conditions to which soldiers were exposed facilitated the migration of the *B. coli* from the intestine to the kidneys, particularly if there was some lesion of the intestine, and in many cases the subjects of nephritis had previously suffered from dysentery, enteritis, or typhoid fever. In this connexion great interest attached to the frequency with which jaundice had lately been observed among soldiers who had previously contracted dysentery or enteritis. In many diagnosed as cholecystitis following "coli sepsis" the distended gall bladder was palpable. It was considered too early to attempt to formulate a definite prognosis in these cases of haemorrhagic nephritis; but on the whole a benign course was anticipated. Only three cases had terminated fatally, and in them probably the disease was of old standing. In one case the large white kidney was found, and in two cases the small, granular kidney (*Schrumpf-niere*). The symptoms in these three cases were those of sepsis, not those of uraemia. The necropsy also showed signs of sepsis, including enlargement of the spleen. The flooding of the urine with *B. coli* was intermittent, whereas haematuria was the most persistent phenomenon. It was considered advisable to keep the patients under observation for some time after they had apparently recovered. In a great number of the cases there was a definite relation between previous attacks of intestinal disease and pyelonephritis. It was maintained that this condition was far more common than was generally recognized, and that the *B. coli* played an important part in its causation.

In his contribution to the discussion Professor H. Schlesinger pointed out that the frequency with which the nephritis occurred in March and April suggested one common cause. He had been told by some army surgeons that the nephritis, in a certain number of cases, had been intentionally provoked by such drugs as cantharides and chromic acid, but this explanation probably held good only for a negligible proportion of all the cases. The nephritis was characterized by the length of the acute stage and by the obstinacy with which symptoms persisted. The haematuria often lasted many months. It was a curious fact that in a great number of cases hypertrophy of the heart did not supervene. He was somewhat sceptical as to the relation between intestinal disease and nephritis. He was of the opinion that the subjects of haemorrhagic nephritis were no longer fit for active service.

Professor Strasser said that he had seen about one hundred cases of "war nephritis." The severe symptoms were, in his opinion, evidence of extensive renal disease. He had often found as much as 3 per cent. albumin in the urine. About twenty of his cases belonged to the category of "coli sepsis." There were, however, many cases the etiology of which was independent of the *B. coli*. There must be many soldiers on active service whose kidneys had previously been injured by scarlatina or other disease, and also, assuredly, alcoholists, whose reaction to cold and overwork would take the form of renal disease. Discussing the hypothetical relation between intestinal disease and nephritis, he drew attention to the facts that, though the epidemic of dysentery had culminated in September and October, the maximum incidence of the nephritis was observed more than half a year later. In very many of his cases the patients had been exposed to wet and cold, which, as experience proved, must provoke albuminuria. He had found nothing to check the haemorrhage in these cases. Though he considered soldiers who had recovered from this nephritis no longer fit for active service, he thought they might still be used for less strenuous military duties. On active service such patients were liable to relapse.

Dr. A. Schiff insisted that many of these patients had been treated for nephritis before the war, and that their "war nephritis" was nothing more than a relapse. In six out of seventeen cases the patients attributed their symptoms directly to exposure to cold. He also drew attention to the fact that, though the epidemic of dysentery had ceased, cases of nephritis in the field were still cropping up. Indeed, soldiers who had not been on active service sometimes developed nephritis after exposure to cold. He thought that with proper treatment many of these patients would recover; but in view of the frequency with which relapses occurred he considered they should not be sent back on active service. In two of his cases he had traced the nephritis to a previous attack of dysentery.

Professor E. Schwarz expressed his astonishment at the frequency with which nephritis occurred; he remarked that though pyelonephritis was well known in time of peace, haemorrhagic nephritis was exceedingly rare. Though he did not deny the part played by micro-organisms, he thought that in many cases the outbreak of the disease was determined by exposure to cold. He had found both polyuria and oliguria among his patients, and he thought these phenomena might represent different stages of the same disease. The last traces of albumin and blood were difficult to banish from the urine, and were apt to increase again on provocation, such as over-indulgence in alcohol. Another speaker confessed that the severe haematuria observed in some of these cases was unaffected by dietetic and therapeutic measures. Many of his patients had never suffered from any intestinal disease. Professor K. Landsteiner reported that he had found the paratyphoid bacillus in a case of parenchymatous nephritis associated with numerous haemorrhages. Professor L. Braun confirmed the statement that this nephritis was not confined to soldiers returning from the front, but was also observed among soldiers remaining in Vienna. He did not think that the nephritis could be traced to one common cause, and he had observed cases in which no explanation of the origin of the disease was forthcoming; the examination of the stools was negative, there was no sign of dysentery, and the patients had not previously been exposed to a soaking.

Professor C. Singer, on the other hand, considered that dysentery in many cases was a predisposing factor, and called to mind that dysentery might be followed by septic infection. Protective inoculation might well lead to the stirring up of quiescent micro-organisms. Among many patients suffering from jaundice there was a history of paratyphoid infection, and agglutination of the paratyphoid bacillus was often observed in these cases. Dr. Pribram cited experiments on animals to show that the subcutaneous injection of immune bodies even in large quantities did not harm parenchymatous organs.

[1] *Wien. med. Woch.*, October 30th, 1915.

MALINGERING IN THE FRENCH ARMY.

(*From a Correspondent.*)

FROM various recent communications in the French medical press it is plain that the problem of outwitting the malingerer is one which occupies a large share of the army surgeon's attention. It is equally plain that the simulation of different diseases has become a fine art, though the ingenuity displayed in this direction is often wasted owing to the simulator's ignorance of pathological associations and limitations. There have been epidemics of jaundice which for some time greatly puzzled the medical officers

of hospitals at or near the front, but the very number of the cases led to close inquiry, when it was discovered that a yellow coloration of the skin can be brought about by the ingestion of picric acid. Once suspicion was aroused the unmasking of the perpetrator was an easy matter and a court-martial followed. The directions for the detection of picric acid in the urine are to render it alkaline and add a solution of potassium cyanide (1 in 5). On heating, the mixture yields a deep purplish-blue tint. Another test is to shake up a sample of the urine with twice its volume of ether, whereupon the latter acquires a yellow hue. If a strip of white wool be steeped therein it is dyed yellow and the colour cannot be removed by washing. If the dyed wool is dipped in a solution of ammonium sulphide, it turns red. Apart from these chemical tests, the jaundiced subjects do not present the colourless stools, slowness of pulse, or itching associated with jaundice, and the urine does not contain bile pigments.

Another popular trick is to introduce white of egg into the urine or even to inject it into the bladder; it renders the urine albuminous, in diminishing quantities, for twenty-four hours. As a rule simulators overstep the mark in that the amount of albumin is incompatible with the general health of the subject. A modification of this trick is to have a little white of egg in a pocket, the finger is dipped into it when the man is asked to micturate, and the jet is made to wash the albumin off into the specimen for examination.

In another series of cases oedema is simulated by injecting water beneath the skin, and in the same order of ideas we meet with fixation abscesses determined by the injection of paraffin or turpentine. The former causes a mild abscess, but the inflammation set up by the latter may be serious. These abscesses are usually situated on the inner aspect of the left lower limb, and the patient describes himself as suffering from "phlebitis." It follows that phlebitis of the left leg, starting on the inner aspect, should be regarded with some suspicion. The points to be borne in mind in arriving at a diagnosis are that the area of inflammation is strictly localized, and develops around the mark of a puncture; there is no tendency to lymphangitis and no rise of temperature or constitutional disturbance. Care must be taken in opening these abscesses not to apply iodine, ether, or other odoriferous substance to the skin because this might prevent the characteristic odour of paraffin or turpentine being perceived on evacuation. There is, however, no limit to the misplaced ingenuity of the pacifists in this direction. Victims of slight wounds to the head have been known to prolong their convalescence indefinitely by provoking inequality of the pupils by the judicious use of atropine. Some men on their way to the front are taken ill, and have to be detained at a station infirmary, the favourite device being acute conjunctivitis, induced by means of snuff or powdered ipecacuanha, or facial "erisipelas" precipitated by the application of croton oil. Hydrarthrosis of the knee is simulated by placing a potato in the popliteal space and strongly flexing the joint for a few hours, just as swelling of the feet can be brought about by tying the puttees too tightly. Simulated epilepsy is a form of deceit that will not withstand close scrutiny, and men suspected of "trying it on" are at one sent to the line of fire *pour encourager les autres*. There have been many cases of alleged retention or incontinence of urine consequent upon nervous shock, but careful observation and instrumental exploration enables the specialist to decide which cases call for treatment and which may safely be ignored. The detection of simulated defects of sight and hearing calls for highly technical methods of investigation which have now been so perfected that probably not even the specialist himself could steer his way through the maze and escape conviction.

EXPERIENCES OF A NORWEGIAN DOCTOR IN AUSTRIA.

A NORWEGIAN doctor, Einar Aaser, who served for several months with the Austrian forces in various districts, has published an account of his experiences in *Norsk Tidsskrift for Militaermedicin* (vol. xix, No. 3, 1915).

FAULTY AMBULANCE ORGANIZATION.

In the early months of the war the transport of the sick and wounded from the front was hopelessly disorganized, and many of the sick spent over a week on the railway on their way to the base hospitals. Even when the infectious nature of disease was recognized at the front the patients were crowded together with the wounded, and were hurried inland without isolation precautions. The injunction not to use the lavatories while a train was halted at a station was a dead letter to patients suffering from cholera, dysentery, and typhoid fever, and among the civilian patients infection was frequently traceable to neglected disease among the soldiers. Indeed, at one time in Vienna there were more civilians than soldiers suffering from dysentery. Dr. Aaser suggests that this disease among civilians might have been largely averted had the military authorities adopted measures to protect civilians as well as soldiers from infectious disease. In war time the non-military authorities found themselves practically powerless to cope with the problems of infectious disease among the civil population.

FEEDING THE WOUNDED AT RAILWAY STATIONS.

According to the mobilization scheme, the train service was slowed down, the maximum speed being 17 kilometres an hour. Journeys, therefore, which under ordinary conditions would have lasted only a day, took three to four. At the few stations where refreshment stalls existed the arrival of a train was a signal for a free fight for sausages and beer. Matters were considerably improved when the Red Cross organized refreshment stalls free of charge at the large stations, where the military trains usually stopped for some time. The ladies who volunteered for this service met the trains at all hours of the day and night, and supplied with food and drinks not only the sick and wounded returning from the front, but also the new drafts travelling in the opposite direction. In spite of the admirable services rendered by these ladies, the system was abandoned, probably because of the fear of infection.

DYSENTERY.

Soon after the outbreak of the war the Wilhelmina Children's Hospital in Vienna was set aside for the treatment of men suffering from dysentery. Before admission to the pavilions of the hospital they were rubbed with parasitic applications to destroy lice. Most of the soldiers referred the onset of the disease to attacks of anorexia, rheumatic pains, and slight rigors. Only a few had suffered from vomiting. These prodromal symptoms were soon followed by almost continuous pain in the epigastrium, accompanied by severe diarrhoea and almost unbearable tenesmus. Though the evacuations were often as frequent as thirty to forty a day, and prevented sleep, the general appearance of the patients was, on the whole, good; and it was very exceptional to find cyanosis, collapse, and other signs of severe infection. The soldiers complained of having had to march for as long as five days at a time out of touch with the commissariat, and on these occasions they had to subsist on the potatoes they dug up and the fruit they picked. The supply of water was also inadequate. Though the majority of the men in one company was infected, only a few gave up; the rest struggled on, and when a certain district had been left behind the outbreak ceased suddenly. This was attributed to the escape from an area saturated with infection by soldiers defaecating on the march. The treatment was principally dietetic; a full fluid diet was combined with narcotics, such as morphine. Only the most severe cases were treated with serum, and its effects were scarcely noticeable. The results obtained by dietetic treatment in one hospital, by serum in another, and by intestinal irrigation in a third, were all good, and in the hospital in which Dr. Aaser worked there was only one death. In his opinion the subjects of dysentery recover in spite of every treatment.

CHOLERA.

After numerous outbreaks of cholera had occurred in different parts of the interior, the authorities realized how faulty the isolation of infected persons had been, and proceeded to establish large quarantine stations. Dr. Aaser was attached to one of these in Marisch-Weisskirchen, where 2,400 beds were provided, and where the wounded from West Galicia were detained for five to six days before being transferred to the interior. Subsequently he was transferred to Witkowitz, a manufacturing town only a few miles from Cracou. He estimates that the number

of cases of cholera in this area did not exceed a couple of thousand, and he was astonished to find how mild a course the disease usually ran. At the outbreak of the war no soldier had been inoculated against cholera, but after the disease had broken out in the Serbian campaign inoculation was made compulsory for every soldier; 1 c.cm. of an emulsion of dead cholera bacilli was injected subcutaneously, and the same dose was repeated four to six days later. The reactions were so slight that they did not interfere with the soldiers' duties. It was, in Dr. Aaser's opinion, this prophylactic inoculation which reduced the incidence of the disease and caused it to run so mild a course. When it attacked the uninoculated, its manifestations were much more alarming. The slight cases required little treatment apart from careful nursing; the severe cases were treated with calomel, charcoal, and bolus alba, given internally; and by subcutaneous injection of serum, the action of which, in many cases, was strikingly beneficial. Large subcutaneous or intravenous injections of saline solution were given as a last resource, and were often very effective. When hypertonic saline solution was used, it was given intravenously only. The mortality was very low, and only three out of about fifty patients died under Dr. Aaser's care. Though he attributed this low death-rate to prophylactic inoculation, he anticipated that this procedure was calculated to produce many slight cases and "carriers," who would be a source of grave danger to the uninoculated population when the soldiers returned home.

Quarantine Arrangements.

The number of sick and wounded in a train which had been dispatched was notified to the quarantine hospital, and the whole staff met the train at the station and at once began to sort out the infectious from the non-infectious cases. Two non-commissioned officers collected the soldiers' weapons and equipment, and uniforms were at once disinfected in steam and subsequently washed. Meanwhile two elderly Sisters took charge of and registered the soldiers' money and other articles of value. The men were then bathed and put into clean clothing, and at this stage a further grouping was made, according as the cases were medical or surgical. As soon as the dressings were changed, the first meal, consisting of sausages, soup, and bread, was given. In a draft of men from the front, 10 to 15 per cent. usually consisted of infectious cases, but the nature of the infection was, as a rule, not recognized till the patients had been in quarantine for a few days. A great drawback to the system was the lack of facilities for operating in the quarantine station itself, and on several occasions it was necessary to ignore the quarantine and to transfer the patient to a purely surgical ward so as to perform some urgent operation. There were no fully-trained nurses available in this quarantine establishment, and the nursing devolved on women whose qualification for the work consisted of a three weeks' course of theoretical and practical instruction. Yet, on the whole, they did excellent service, not so much in changing dressings and handing instruments, as in helping the patients at their meals, writing letters for them, etc.

LORD FRENCH'S DISPATCH.

The following are among the names mentioned in Field-Marshal Lord French's dispatch of November 30th, 1915, for gallant and distinguished service in the field:

Army Medical Service.

General Head Quarters Staff, Etc.

Surgeon-Generals: W. G. Macpherson, C.B., C.M.G., M.B., K.H.P.; T. J. O'Donnell, D.S.O.; M. W. O'Keefe, C.B., M.D.; R. Porter, M.B.; F. H. Treherne, C.M.G., F.R.C.S.E.; T. P. Woodhouse, C.B.

Colonels: G. H. Barefoot, C.M.G.; E. G. Browne; C. H. Burtchaell, C.M.G., M.B.; G. Cree, C.M.G.; R. H. Firth, F.R.C.S.; M. P. C. Holt, C.B., D.S.O.; G. D. Hunter, D.S.O.; R. Kirkpatrick, C.M.G., M.D.; S. MacDonald, M.B.; R. L. R. MacLeod, M.B.; C. E. Nichol, D.S.O., M.B.; D. M. O'Callaghan; W. W. Pike, D.S.O., F.R.C.S.I., A.M.S.; G. T. Rawnsley; J. J. Russell, M.B.; B. H. Scott; B. M. Skinner, M.V.O.; W. H. Starr; H. N. Thompson, D.S.O., M.B., A.M.S.; H. C. Thurston, C.M.G.; T. du B. Whaite, M.B., A.M.S.; J. B. Wilson, M.D., A.M.S.; C. A. Young, A.M.S.

Temporary Colonels: J. Atkins, M.B., F.R.C.S., A.M.S.; W. C. Beevor, C.M.G., M.B., T.F. (Lieutenant-Colonel, ret. pay).

Lieutenant-Colonels: E. T. F. Birrell, C.M.G., M.B., R.A.M.C.; F. J. Brakenridge, R.A.M.C.; A. Chopping, R.A.M.C.; S. L. Cummins, C.M.G., M.D., R.A.M.C.; H. E. M. Douglas, V.C., D.S.O., R.A.M.C.; H. B. Fawcus, C.M.G., M.B., R.A.M.C.; L. N. Lloyd, D.S.O., R.A.M.C.; C. K. Morgan, M.B., R.A.M.C.; F. S. Penny, M.B., R.A.M.C.; H. S. Roch, R.A.M.C.; J. M. Sloan, D.S.O., M.B., R.A.M.C.; N. Tyacke (temp. Col.), M.B., R.A.M.C.

Majors: C. G. Browne, D.S.O., R.A.M.C.; B. B. Burke, R.A.M.C.; J. M. H. Conway, F.R.C.S.I., R.A.M.C.; P. Davidson, D.S.O., M.B., R.A.M.C.; P. G. Easton, R.A.M.C.; C. C. Fleming, D.S.O., M.B. (Res. of Off.); J. A. Hartigan, M.B., R.A.M.C.; T. E. Harty, R.A.M.C.; P. H. Henderson, M.B., R.A.M.C.; H. C. Hildreth, F.R.C.S.Edin., R.A.M.C.; J. D. Richmond, M.D., R.A.M.C.; M. B. H. Ritchie, M.B., R.A.M.C.; A. B. Smallman, M.D., R.A.M.C.; R. N. Woodley, R.A.M.C.

Captains: J. J. H. Beckton, R.A.M.C.; F. W. M. Cunningham, M.D., R.A.M.C.; R. Gale, D.S.O., M.B., R.A.M.C.; F. D. G. Howell, R.A.M.C.; W. P. MacArthur, M.D., F.R.C.P.I., R.A.M.C.; J. W. L. Scott, M.B., R.A.M.C.

Consultants.

Temporary Colonels: Sir B. E. Dawson, K.C.V.O., M.D. (Captain London General Hospital, R.A.M.C.T.F.); H. McI. W. Gray, M.D., F.R.C.S.Edin. (Major Scottish General Hospital, R.A.M.C.T.F.); W. T. Lister, M.B., F.R.C.S.; H. A. Thomson, M.D., F.R.C.S. (Captain Scottish General Hospital, R.A.M.C.T.F.); C. S. Wallace.

Royal Army Medical Corps.

Lieutenant-Colonels: L. Addams-Williams; J. E. Brogden; T. H. M. Clarke, C.M.G., D.S.O., M.B.; R. W. Clements, M.B.; V. J. Crawford, D.S.O.; G. H. Goddard; H. A. Hinge (temporary Colonel); A. W. Hooper, D.S.O.; W. E. Hudleston; E. T. Inkson, V.C.; F. Kiddle, M.B.; J. W. Langstaff; J. W. Leake; J. R. McMunn; C. W. Mainprise; E. W. P. V. Marriott; H. G. Martin; G. A. Moore, M.D.; W. H. S. Nickerson, V.C., M.B.; H. H. Norman, M.B.; M. MacG. Rattray, M.B.; J. P. Silver, M.B.; F. Smith, D.S.O. (Brevet Colonel); A. A. Watson (S.R.), (Lieutenant-Colonel R.A.M.C.T.F.); A. O. B. Wroughton.

Temporary Lieutenant-Colonel: T. C. English, M.B., F.R.C.S. (Captain London General Hospital, R.A.M.C.T.F.).

Majors: R. B. Ainsworth; E. G. Anthonisz; R. B. Black, M.B. (Res. of Off.); G. H. J. Brown, M.B.; J. H. Campbell, M.B.; K. A. C. Doig; FitzG. G. Fitzgerald; A. W. Gibson; P. J. Hanafin; D. L. Harding, F.R.C.S.I.; H. Harding, M.B.; A. E. S. Irvine; E. F. Q. L'Estrange; R. P. Lewis; S. E. Lewis, M.B.; N. Low; J. T. McEntire, M.B.; A. A. Meaden; S. M. W. Meadows; A. H. McN. Mitchell; J. S. Pascoe; L. M. Purser, M.B.; J. M. B. Rahilly, M.B.; W. Riach, M.D.; T. F. Ritchie, M.B.; F. E. Roberts; E. Ryan; F. C. Sampson, M.B.; H. F. Shea, M.B.; M. Sinclair, M.B.; R. S. Smyth, M.D.; H. Stewart, M.B.; R. Storrs; R. J. C. Thompson; J. A. Turnbull; C. H. Turner; W. J. Waters; J. W. West, M.B.; R. K. White; W. Wiley, M.B.

Temporary Major: E. L. Gowlland, M.B.

Captains: J. Adams, M.B. (S.R.); J. E. Allan, M.B. (S.R.); R. R. G. Atkins, M.B. (S.R.); J. H. Baird, M.B. (S.R.); D. C. G. Ballingall, M.B.; H. C. Bazett, M.B., F.R.C.S. (S.R.); W. K. Beaman; F. A. Bearn, M.B. (S.R.); E. C. Beddows; W. J. E. Bell, D.S.O., M.B.; J. E. Black, M.B. (S.R.); J. E. M. Boyd; A. B. H. Bridges; W. K. Campbell, M.B. (S.R.); A. G. W. Compton (S.R.); A. R. Dale (S.R.); E. C. Deane (killed); G. De La Cour, M.B.; R. M. Dickson, M.B.; M. G. Dill, M.D.; J. S. Dockrill, M.B. (S.R.); J. C. A. Dowse, M.B. (S.R.); A. C. Elliott, M.B.; E. J. Elliot, M.B.; P. Elvery, G.M.; D. B. Chiles-Evans, M.B. (S.R.), Welsh Field Ambulance, R.A.M.C.(T.F.); A. J. Ewing, M.B. (S.R.); F. G. Flood, M.B. (S.R.); R. Forgan, M.B. (S.R.); W. Fotheringham, M.B. (S.R.); H. R. Friedlander (S.R.); J. K. Gaunt, M.B.; A. J. Gilchrist, M.B. (S.R.); T. O. Graham, M.D., F.R.C.S.I. (S.R.); J. W. Gray, M.B. (S.R.); J. B. Grogan; B. Goldsmith (S.R.); O. Hairsine (S.R.); T. Hampson, M.B. (Res. of Off.); H. A. Harbison, M.B. (S.R.); J. W. P. Harkness, M.B. (S.R.); R. Hemphill, M.B.; A. H. Heslop, M.B.; J. W. Houston, M.B.; B. Hughes, M.B., F.R.C.S., West Riding Field Ambulance, R.A.M.C.(T.F.); A. C. Jebb, M.B. (S.R.); K. W. Jones, D.S.O., M.D. (S.R.), East Lancashire Field Ambulance, R.A.M.C.(T.F.); F. R. Kerr, D.S.O., M.B. (S.R.); D. R. King, M.B. (S.R.); S. D. Large; N. V. Lothian, M.B.; W. H. L. McCarthy, M.D. (S.R.); W. McK. H. McCullagh, M.B. (S.R.); C. McN. McCormack, M.B. (S.R.), J. R. McCurdie, M.B. (S.R.); D. Mackie, M.B. (S.R.), J. W. McNee, M.B. (S.R.); C. McQueen; J. J. Magner, M.B. (S.R.), D. M. Marr, M.B. (S.R.), A. J. A. Menzies, D.S.O., M.B.; S. Miller, M.B. (S.R.), T. MacK. Miller, (S.R.); J. P. Mitchell, M.D. (S.R.); T. J. Mitchell, M.B., H. G. Monteith, D.S.O.; G. T. Mullaly, M.B., F.R.C.S. (S.R.); R. E. U. Newman, M.B.; C. M. Nicol, M.B.; A. P. O'Connor, M.B.; J. A. O'Driscoll (S.R.); J. J. O'Keefe, M.B.; E. M. O'Neill, M.B.; W. H. O'Riordan; K. L. O'Sullivan, (S.R.); R. C. Ozanne, M.B. (S.R.); G. S. Parkinson; H. M. J. Perry; G. Petit; E. Phillips, M.B.; W. T. Quinlan (S.R.); A. Ramsbottom, M.D. (S.R.) East Lancashire Field Ambulance, (R.A.M.C.T.F.); E. Robinson, M.B., (S.R.); A. W. Russell, M.B. (S.R.); E. U. Russell; P. Sampson, D.S.O.; H. B. Sherlock (S.R.); W. C. Smales; H. Smith (S.R.); S. H. Smith; C. W. Sparks, (S.R.); G. H. Stevenson, M.B. (S.R.); E. A. Sutton; R. G. H. Tate, M.D.; M. R. Taylor, M.B. (S.R.); W. O. Tobias, M.B. (S.R.); F. T. Turner; W. Tyrrell, M.B. (Res. of Off.); T. Walker, M.B. (S.R.); Q. V. B. Wallace, M.D. (S.R.); S. J. A. H. Walshe, D.S.O., M.B. (S.R.); H. K. Ward,

M.B. (S.R.); J. H. Ward, M.B. (S.R.); A. G. Wells; M. J. Williamson, M.B.; F. Worthington, M.B.; A. R. Wright, M.B.; T. W. Wylie, M.B. (S.R.).

Temporary Captains: J. A. Andrews, M.B.; J. H. Barry; D. Bell, M.B.; L. G. Bourdillon; A. E. Bullock (killed); E. W. Carrington, M.B. (killed); R. Charles, F.R.C.S.I.; R. E. Cree, M.B.; W. S. Danks, M.D.; J. W. Dew, M. Donaldson, M.B., F.R.C.S.; G. D. Ferguson, M.B.; P. Ferguson, M.B., F.R.C.S.; W. Foot, M.B.; J. M. Gillespie, M.B.; R. H. C. Gompertz, M.B.; G. L. Grant (killed); J. R. C. Greenlees, D.S.O., M.B., E. H. Griffin, M.D.; S. Gurney-Dixon; C. S. P. Hamilton, D.S.O.; F. A. Hampton, M.B.; E. B. Jardine; H. J. R. Jones; W. Kelsey-Fry; R. Kennon, M.D.; H. R. Knowles, M.B.; D. A. Laird, M.B.; T. A. Lawder, M.B.; E. F. W. Mackenzie, M.B.; S. F. McDonald, M.B.; J. M. McLaggan, M.B.; J. C. MacLean, M.D.; J. A. MacLeod, M.B.; J. W. McLeod, M.P.; J. H. McNicol, M.B.; D. McVicker; E. K. Martin, F.R.C.S.; G. Millar, M.B.; W. G. Mumford, M.B., F.R.C.S.; F. L. Nash-Wortham, F.R.C.S.Edin.; G. E. Neligan, M.B., F.R.C.S.; C. J. O'Reilly, M.D.; T. E. Parker, M.B.; H. W. Parnis, M.D.; M. Peto, M.B.; W. B. Purchase; G. Rankine, M.B.; E. L. N. Rhodes; O. Richards, D.S.O., M.D., F.R.C.S.; J. E. H. Roberts, M.B., F.R.C.S.; R. E. Roberts; R. C. Robertson, M.B.; H. A. Ronn, M.B.; W. A. Russell, M.B.; J. F. Smith, M.B.; P. Smith; T. V. Somerville; D. B. Spence; D. J. S. Stephen, M.D.; J. S. Stewart, M.B.; G. Stiell; F. R. Thornton, M.B.; S. L. Walker, M.B.; A. W. Weston, M.B.; J. S. Wilson, M.D., F.R.C.S.; C. G. L. Wolf, M.D.; R. F. Young, M.B.

Lieutenants: A. F. Menzies, M.D.; and C. S. Williams, M.D., of the Canadian A.M.C.

Temporary Lieutenants: D. C. Alexander, M.B.; J. E. Barnes, M.B.; C. M. Bernays; J. H. Boag, M.B.; H. E. A. Boldero; C. A. Boyd, M.D.; B. S. Browne, M.B.; P. Cagney; J. Caton-Shelmerdine; W. E. David, M.B.; C. G. Douglas, M.D.; J. Dunbar, M.B.; J. C. Dunn, M.D.; J. D. Driberg; R. H. Fothergill, M.B.; H. C. Godding; R. A. Hughes, M.D.; C. A. Kenny; J. T. Kirkland, M.B.; M. MacKenzie; O. G. Maginness; R. H. McGillycuddy; T. Meagher, M.B.; C. S. L. Roberts; A. R. Roche; H. A. Rowell; L. D. Saunders; C. A. Smallhorn; J. F. Steven, M.B.; J. K. Stewart; T. Strain, M.D.; R. H. Tribe; H. B. Walker, M.B.; D. G. Watson, M.B. (died of wounds); W. N. Watson, M.B.; J. R. M. Whigham; N. S. Whitton, M.B.; A. F. Wright, M.B.

Late Temporary Lieutenants: A. E. Brown; H. P. Costobadie, F.R.C.S.Edin.; B. V. Dunne, M.B.; R. J. Harley-Mascn; P. W. James, M.D.; A. C. S. Smith; J. B. Wood, M.B.

ROYAL ARMY MEDICAL CORPS (T.F.).

Colonels: J. V. W. Rutherford, F. O. Wight (Lieutenant-Colonel, retired pay).

Lieutenant-Colonels: L. J. Blandford, M.D.; T. F. Dewar, M.D.; S. G. Barling, M.B., F.R.C.S. (South Midland Field Ambulance); W. K. Clayton (Yorkshire Mounted Brigade Field Ambulance); F. Hawthorn, M.D. (Northumbrian Field Ambulance); C. H. Howkins (South Midland Field Ambulance); A. Milne Thomson (Wessex Field Ambulance); W. M. O'Connor, M.D. (London Field Ambulance); R. Pickard, M.D. (Wessex Field Ambulance); W. Ranson, F.R.C.S.Edin. (Northumbrian Field Ambulance, Captain R.A.M.C. (S.R.); A. D. Sharp (West Riding Field Ambulance); A. B. Soltau, M.D. (Wessex Field Ambulance); J. Young, M.D. (South Midland Field Ambulance).

Temporary Lieutenant-Colonels.—W. A. Benson (Northumbrian Field Ambulance); H. Collinson, M.B., F.R.C.S. (West Riding Field Ambulance); L. P. Demetriadi, M.D., F.R.C.S.Edin. (West Riding Casualty Clearing Station); E. Lloyd-Williams (London Field Ambulance).

Majors.—W. B. Armstrong, M.B.; J. P. Brown, M.B.; H. L. de Legh, M.D.; A. Don, M.B., F.R.C.S.Edin., (Highland Casualty Clearing Station); A. D. Ducat, M.B.; G. H. L. Hammerton (Yorks Mounted Brigade Field Ambulance); T. Kay, M.B.; A. E. Kidd, M.B. (Highland Field Ambulance); W. B. Mackay, M.D.; E. C. Montgomery-Smith (London Field Ambulance); T. P. Puddicombe (Wessex Field Ambulance); W. F. Roe; J. S. Y. Rogers, M.B.; H. B. Syroat, M.D. (West Riding Field Ambulance); J. Ward (temporary Lieutenant-Colonel, Home Counties Field Ambulance).

Temporary Majors: J. W. Bird, D.S.O. (London Field Ambulance); J. C. S. Burkitt, M.D. (North Midland Field Ambulance); H. G. G. Mackenzie, M.D. (temporary Lieutenant-Colonel, Home Counties Field Ambulance); T. H. Peyton, M.D. (Home Counties Field Ambulance).

Surgeon-Majors: A. R. Stoddart, M.B. (West Yorks Regiment, T.F.); E. G. Stocker (Wessex Divisional Engineers, R.E. T.F.).

Captains: J. W. Anderson, M.B.; M. H. Barton; H. T. Bates, M.B. (West Riding Casualty Clearing Hospital); M. H. Barton; F. G. Bennett (North Midland Field Ambulance; J. M. Bowie, M.D.; T. Carnwath, M.B.; F. S. Carson, M.B. (London Sanitary Company); N. G. Chavasse, M.B.; S. Clark (London Field Ambulance); E. A. Cooper (London Sanitary Company); M. Coplans, M.D. (London Field Ambulance); T. W. Crowley, M.D. (Northumbrian Field Ambulance); J. Dale, M.B.; S. H. Daukes, M.B. (London Sanitary Company); H. B. F. Dixon, M.B. (London Field Ambulance); J. Downie, M.B. (Yorks. Mounted Brigade Field Ambulance); C. N. Draycott (London Sanitary Company); R. Errington, M.B. (Northumbrian Field Ambulance); C. H. S. Frankau, M.B., F.R.C.S.Edin. (temporary Major, London Casualty Clearing Station); J. Golding (London Sanitary Company); C. W. Greene, M.B., F.R.C.S. (Home Counties Field Ambulance); H. S. Hollis, M.B. (Home Counties Field Ambulance); G. H. Hunt, M.B. (London Casualty Clearing Station); D. M. Johnston, M.B. (Home Counties Field Ambulance); W. B. Keith, M.B. (Home Counties Field Ambulance); G. Q. Lennane, F.R.C.S.I. (London Sanitary Company); H. Lightstone; H. B. Low, M.D. (Northumbrian Field Ambulance); J. MacMillan, M.B. (London Field Ambulance); G. S. Melvin, M.B. (Highland Field Ambulance); F. Metcalfe, M.B. (Northumbrian Field Ambulance); J. Murdock, M.B., F.R.C.S.Edin.; A. W. Nuthall, F.R.C.S. (South Midland Casualty Clearing Station); W. J. C. B. Pitt (South Midland Casualty Clearing Station); J. A. C. Scott, M.B.; H. J. D. Smythe (South Midland Field Ambulance); R. F. T. Tatlow, M.D.; R. M. Vick (London Field Ambulance); C. G. Watson (T.F.R.), F.R.C.S. (temporary Honorary Lieutenant-Colonel, R.A.M.C.); J. A. Watt, M.B. (London Field Ambulance); G. White (London Sanitary Company); H. F. Wilkin, F.R.C.S.Edin.; G. S. Williamson (South Midland Field Ambulance); W. L. R. Wood.

Surgeon-Captain: R. W. Branthwaite (T.F.R.).

Temporary Captains: J. W. Craven, M.B. (Northumbrian Field Ambulance); J. H. Fletcher, R.A.M.C.; J. R. Marrack, M.B., R.A.M.C.

Lieutenant: S. R. Foster, M.B. (North Midland Field Ambulance).

INDIAN MEDICAL SERVICE.

Colonel: B. B. Grayfoot, M.D.

Lieutenant-Colonels: A. E. Berry, M.B.; J. A. Hamilton, M.B., F.R.C.S.Edin.; A. J. MacNab, F.R.C.S.

Majors: H. Boulton, M.B.; R. J. Bradley, M.B.; G. Browse, M.D.; H. M. Cruddas; A. N. Fleming, M.B., F.R.C.S.Edin.; J. Good, M.B.; C. Hudson, D.S.O., F.R.C.S.Edin.; W. W. Jendwine, M.D.; G. C. L. Kearns; R. A. Needham, M.B.

Captains: F. B. Shettle; H. S. Carmack, M.B., F.R.C.S.Edin.; V. B. Green-Armytage; S. H. Middleton-West, M.B.; R. B. Nicholson; W. C. Paton, M.B.; J. Scott, M.B.; J. Smalley, M.B.; C. H. Smith, M.D., F.R.C.S.; V. N. Whitamore; C. A. Wood, M.B.

INDIAN SUBORDINATE MEDICAL DEPARTMENT.

Bal-Mukand, No. 991 1st Class Sub-Assistant Surgeon; Hira-Lal, No. 1255 1st Class Sub-Assistant Surgeon P.; Hira Sing, No. 929 1st Class Sub-Assistant Surgeon, Rai Bahadur: Jassudasam, No. 1286 1st Class Sub-Assistant Surgeon S.; Kishan Singh, No. 1046 1st Class Sub-Assistant Surgeon; McMillan, 1st Class Assistant Surgeon W. C.; Maine, 1st Class Assistant Surgeon W. J. S.; Pohlo Ram, 772 1st Class Sub-Assistant Surgeon; Shaikh Hussain Ali, Subadar and 1st Class Senior Sub-Assistant Surgeon; Bishan Singh, 1143 1st Class Sub-Assistant Surgeon; Browne, 2nd Class Assistant Surgeon R. F.; Culpankum Virasami Rajagopal Pillai, 2nd Class Sub-Assistant Surgeon; Kishan Singh, 1246 2nd Class Sub-Assistant Surgeon; Pargan Singh, 1230 2nd Class Sub-Assistant Surgeon; Boilard, 3rd Class Assistant Surgeon E. H.; Mathurapershad Sarswit, 1350 3rd Class Sub-Assistant Surgeon; Messinier, 3rd Class Assistant Surgeon E. B.; Rodrigues, 3rd Class Assistant Surgeon J. M.; Browne, 4th Class Sub-Assistant Surgeon W. A.

MEDICAL SERVICES.

Members of the American, Chicago, and Harvard Units, Attached to Nos. 22 and 23 General Hospitals, Etaples: Dr. P. S. Chancellor, Dr. W. J. Dodd, Dr. W. E. Faulkner, Dr. V. Kazanjian, Dr. J. M. Neff.

The list also contains the names of a large number of non-commissioned officers and men, and also members of the nursing services.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

H.M.S. Natal.

THE year 1915 closed, as it had opened, with a naval disaster. On January 1st, 1915, the battleship *Formidable* was sunk in the Channel with the loss of the greater part of her complement. On December 31st the Admiralty announced that H.M.S. *Natal*, armoured cruiser, Captain Eric Back, R.N., had sunk in harbour on the previous afternoon as the result of an internal explosion. This is the third vessel which has been lost by an explosion in harbour since the war began, H.M.S. *Bulwark* and H.M.S. *Princess Irene* both having been destroyed in this way in Sheerness harbour. Out of a total ship's complement of 704 on the *Natal*, 14 officers and 373 men were reported as saved, while 25 officers, including the captain, and 292 men were killed. She carried three medical officers, of whom one, Fleet Surgeon E. S. Tuck, was saved, and two, Staff Surgeon A. Hooper and Surgeon (temporary) D. W. K. Moody, were lost. The locality of the accident has not been made known.

Staff Surgeon Alfred Oswald Hooper was educated at Edinburgh, where he graduated M.B. and Ch.B. in 1903, entered the navy in the following year, and became Staff Surgeon on November 21st, 1912.

Surgeon Douglas Whinster Keiller Moody was educated at Aberdeen, where he graduated M.B. and Ch.B. in 1900

and M.D. in 1902. He subsequently studied in London, Dublin, and Berlin, and filled the posts of house-surgeon of Peterborough Infirmary, assistant medical officer of the Central London Infirmary, and second house-surgeon of Addenbrooke's Hospital, Cambridge. He took a temporary commission as surgeon in the navy on August 10th, 1915.

Army.

Killed in Action.

Captain Anthony Purdon Hegarty Corley, M.D., killed in the Dardanelles last August, was the son of the late Anthony Corley, surgeon to the Richmond Hospital, Dublin, and president of the Royal College of Surgeons, Ireland. He was educated at Trinity College, Dublin, where he took the M.B., B.Ch., B.A.O., and M.D. in 1902. After qualifying he entered the Colonial Medical Service as a Government medical officer in Fiji. He subsequently settled in West Australia, where he served as Government medical officer successively at Wagin and Karridale and as medical officer of health at Pingelly. He joined the first Australian contingent as a combatant officer—captain in the 11th Infantry Battalion—on August 28th, 1914.

Major Frederick Miller Johnson, of the Australian Army Medical Corps, was killed at "Anzac," in the Gallipoli Peninsula, on November 29th. He was educated at Melbourne, and at Edinburgh, where he took the M.B. and C.M. in 1886 and the M.D. in 1888, subsequently studying also in Vienna and at Heidelberg. He then returned to Australia and went into practice at Melbourne, receiving the degree of M.D. *ad eundem* from the university of that city. He was attached to the 6th Australian Field Ambulance when killed. He was a grandnephew of the late Sir William Gull.

Captain Guy Fitzmaurice John Luther, of the Australian Army Medical Corps, killed in the Dardanelles last August, was educated at Trinity College, Dublin, and took the diplomas of L.R.C.S.Ire. and L.R.C.P.Ire. in 1893. After serving as house-surgeon of the City Hospital, Dublin, he went to Australia, where he filled the post of assistant physician to the Goodna Asylum, Queensland, and then settled in practice at Bundaberg, Queensland.

Captain Albert Guy Miller, R.A.M.C., was killed in France on December 29th, aged 31. He was the fourth son of the late Albert Miller, of Wheriside, Toorak, Melbourne. He took a temporary commission as Lieutenant on October 21st, 1914, and was promoted to Captain on completion of a year's service. He was attached to the 12th Battalion Middlesex Regiment.

Lieutenant Arnold Bosanquet Thompson, R.A.M.C.(T.F.), was killed in the Mediterranean (Dardanelles?) on December 25th, aged 29. He was the fourth son of Arthur Thompson, Esq., of Garthlands, Reigate Heath, and of 38, Mincing Lane, London, and was educated at Oxford, where he took the M.B. and Ch.B. in 1914, and at the London Hospital. He was serving in the 1/3rd East Lancashire Field Ambulance.

Lieutenant William Frank Thompson, R.A.M.C., was killed in France on January 1st, aged 28. He was the elder son of W. W. Thompson, Esq., of 3, The Avenue, Brondesbury, was educated at the Leys School, Cambridge, and at Bath, and took the M.R.C.S. and L.R.C.P.Lond. in 1912.

Died of Wounds.

Lieutenant Manockji Burjorji Patel, I.M.S., whose name was in the casualty list as wounded in the battle of Ctesiphon, in Mesopotamia, on November 22nd–24th, has since been reported as having died of his wounds. He took the Scottish triple qualification in 1908, and also the D.P.H., Wales, in 1910. After serving as medical officer of the Madras and Southern Mysore Railway, he went into practice at Khambala Hill, Bombay. He took a temporary commission in the I.M.S. from June 9th, 1915. He is the third Indian-born member of the I.M.S. to fall in the present war, but the first Parsi, and also the first of the temporarily commissioned officers.

Died on Service.

The death is reported, while serving with the Expeditionary Force in France, of Miss M. E. Wilson, Queen Alexandra's Imperial Military Nursing Service, Reserve of Queensland, Australia.

Wounded.

Captain J. E. Brydon, R.A.M.C.(T.F.), Flanders.

Lieutenant R. C. Macmillan, R.A.M.C. (temporary), Flanders.

In the list of medical men killed serving as combatants, published in the British Medical Journal of December 25th, 1915, was given the name of Captain B. M. Hughes, M.R.C.S., of the 1/4th Norfolk Regiment. We are informed that Captain Hughes had been promoted to Major shortly before his death.

Medical Students.

Beasley, James Joyce, third year medical student, Trinity College, Dublin, Second Lieutenant 6th Battalion Royal Irish Fusiliers, missing, believed killed, in the Dardanelles. He got his commission on September 28th, 1914.

Black, Thomas Samuel Cuthbert, fifth year medical student, Trinity College, Dublin, Private 7th Battalion Royal Dublin Fusiliers, died at Alexandria of wounds received in the Dardanelles.

Elliott, Thomas Cecil Moore, third year medical student, Trinity College, Dublin, Private 7th Battalion Royal Dublin Fusiliers, killed in action at the Dardanelles.

Gamble, Richard Maurice Brooks, third year medical student, Trinity College, Dublin, Second Lieutenant 7th Battalion King's Liverpool Regiment, killed at Festubert, in France, on May 17th, 1915. His commission was dated September 5th, 1914.

Heuston, Frederick Gibson, fourth year medical student, Trinity College, Dublin, Second Lieutenant 6th Battalion Royal Irish Rifles, killed in the Dardanelles. He joined on September 22nd, 1914.

Levis, George John France, second year medical student, Trinity College, Dublin, Private 5th Battalion Royal Inniskilling Fusiliers, killed in action in France.

Levis, James Henry Bruce, second year medical student, Trinity College, Dublin, Second Lieutenant 6th Battalion Royal Irish Rifles, killed in the Dardanelles. His commission was dated November 6th, 1914.

Murphy, James Neville Herbert, third year medical student, Trinity College, Dublin, Second Lieutenant 5th Battalion Royal Dublin Fusiliers, killed in Flanders, on May 10th, 1915. He got his commission on August 15th, 1914.

Nelis, James Edward Thornhill, third year medical student, Trinity College, Dublin, Lieutenant 5th Battalion Royal Inniskilling Fusiliers, killed in the Dardanelles. He was commissioned from November 19th, 1914.

Snell, Philip Sidney, third year medical student, Trinity College, Dublin, Second Lieutenant 6th Battalion Royal Irish Fusiliers, killed in the Dardanelles. His commission was dated September 28th, 1914.

Toomey, Archibald Roche, fifth year medical student, Trinity College, Dublin, Second Lieutenant 6th Battalion Leinster Regiment, killed in the Dardanelles. He joined on November 28th, 1914.

Deaths among Sons of Medical Men.

Hudson, Arthur Frederick, Corporal 16th Battalion Canadian Scottish, eldest son of Dr. Hudson, of British Columbia, late of Cobham, Surrey, killed at Ypres on April 22nd, aged 21.

Lee, Charles Stewart, Second Lieutenant Royal Engineers, only child of Lieutenant-Colonel W. A. Lee, I.M.S.(ret.), killed in France on December 30th, aged 19.

Wight, Ronald Toynbee, Loyal Sussex Hussars, only son of T. H. Toynbee Wight, M.D.Harvard, died on October 30th in hospital at Malta, of dysentery contracted in the Dardanelles, aged 20.

Trinity College, Dublin.

We are indebted to Professor Dixon, of Trinity College, Dublin, for a roll of honour of the medical school of that university up to a recent date. Eleven graduates and fifteen undergraduates have been killed in action, while thirteen undergraduates at least are known to have been wounded.

The eleven graduates are Staff Surgeon W. G. Moore-Anderson and Surgeon G. Taylor, R.N.; Major E. B. Steel, Captain C. T. Conyngham, temporary Captain J. N. Armstrong, Lieutenant W. O. W. Ball, and temporary Lieutenants G. M. M. Fleming and J. A. Macmahon, R.A.M.C.; Captain G. F. J. Luther, Australian A.M.C.; Captain A. P. H. Corley, Australian Infantry; and Dr. P. N. Gerrard of Singapur. Brief notices of Captains Luther and Corley are given above. The others have all received a tribute in the Journal already.

Notices of four of the undergraduates—Captain R. P. Tobin, and Lieutenants G. F. Dobbin, J. R. Duggan, and H. H. Warnock—have already appeared in the Journal. Brief notices of the others are given above.

The thirteen undergraduates wounded are Captain W. C. L. Shee, Lieutenants G. C. Ballentine, F. F. J. Battersby, A. L. Gregg, E. J. Hamilton, G. W. Holmes,

C. F. Kennedy, C. R. E. Littledale, J. McClelland, A. A. Murphy, G. R. G. Smyth, and R. L. Vance, and Private G. G. Allardyce. Lieutenant Holmes is an Irish international football player. Lieutenant Vance has just passed his final examination, having qualified while on leave.

NOTES.

MEDICAL OFFICERS WANTED.

The Welsh General Hospital.

THIS hospital, to which we have already referred, is a general hospital of 1,040 beds, the personnel of which is being raised by Wales for overseas service. The medical staff includes officers in charge of medical and surgical divisions, an ophthalmologist, pathologist, radiographer, and ear and throat specialist. A dental surgeon with a medical qualification will also be accepted. Appointments are for temporary commissions for service with the hospital. Officers who already hold temporary commissions or Territorial commissions are not accepted, with this exception, that the officers in charge of the medical and surgical divisions, who should be consultants in their own branches, may be transferred from Territorial units if they can be spared. The hospital is under the command of Lieutenant-Colonel A. W. Sheen, R.A.M.C.(T.F.), and leaves probably some time in February next. Forms of application for posts can be obtained from the Hon. Secretaries, Welsh Hospitals Offices, 47, Principality Buildings, Cardiff.

2/2nd South Midland Mounted Brigade Field Ambulance.

Medical officers are urgently wanted for this unit, at present stationed at King's Lynn. They must be prepared to sign for foreign service. Applications to Major A. G. Magrath, Officer Commanding 2/2nd South Midland Brigade Field Ambulance, London Road, King's Lynn.

2/3rd South Midland Mounted Brigade Field Ambulance.

A medical officer is required for this unit, which is stationed at Oxford for the winter. Full particulars can be obtained on application to the Officer Commanding, 1, Iffley Road, Oxford.

EMOLUMENTS OF MEDICAL OFFICERS TERRITORIAL OR WITH TEMPORARY COMMISSIONS.

Major R. Eager, O.C. 2/1st Wessex Field Ambulance, writes: In your issue of December 25th, 1915, I note that an officer commanding a Territorial Field Ambulance is asking for five medical officers, and as an inducement states, "rates of pay, etc., higher than temporary commissions abroad." I should be obliged if this commanding officer will explain to me and the rest of your readers how he can substantiate this statement

*** We have communicated with the O.C. in question, and in reply he refers Major Eager to the JOURNAL of October 30th, p. 662.

Scotland.

WESTERN INFIRMARY, GLASGOW.

AT the Christmas meeting at the Western Infirmary, Glasgow, it was announced that the building scheme had been completed, and the new departments were formally opened. The meeting was held in the new admission department. The chairman of the Board of Managers, Sir Matthew Arthur, Bt., who presided, said that the new block in addition to providing a new admission department connected the new wing with the main building, and supplied the operating theatres and administrative rooms required. The admission department was the groundwork of the scheme, and it had been possible to carry it out owing to the gift of £16,000 by the Davis trustees. Rooms were provided in which minor operations could be performed on slighter cases and casualties and the patients cared for until they were able to leave. Such cases often came in at night, and if taken to the wards the patients there were disturbed. On the floor above had been built what was recognized by experts as one of the most perfect operating theatres in existence. Its cost, £3,500, had been defrayed by Mr. William Robertson, who had also defrayed the cost, £8,000, of the large ward in the new wing. While the new building would help the efficiency of the infirmary, it would not increase the annual expenditure, and did not add to the number of beds. The year had been a strenuous one; some of the physicians and surgeons were entirely engaged in war work, while the remainder combined it with their other duties. The medical superintendent, Colonel Mackintosh, M.V.O., and the matron, had been incessant in their labours. The infirmary had provided 100 beds for wounded soldiers, and it was fortunate that the dispensary was so planned that the hall made an excellent ward of 50 beds, from which the patients could be easily taken to the consulting rooms and operating theatres. By affording facilities for the training of nurses the infirmary rendered a great service to the community; the value of trained nurses had never been more fully realized. The Davis Admission Department, and the William Robertson Operating Theatre, were then declared open by Miss Davis and Mr. Robertson respectively. Colonel Roxburgh, the convener of the House Committee, in moving a vote of thanks to the donors, said that the hospital was now practically complete in every respect, and unless some special gift were given for some special purpose he did not think that any further expenditure on building need be anticipated.

GLASGOW ROYAL INFIRMARY.

In addressing the nurses at the Glasgow Royal Infirmary on New Year's Day, the Lord Provost said that practically all the members of the medical and surgical staff were doing military duty; thirty-eight held commissions in the Royal Army Medical Corps, and twelve were engaged in Red Cross hospitals. Of those who held commissions, twenty-five were so actively employed on war duty that they were not available for the ordinary work of the infirmary; nevertheless it had gone on as usual. Eight wards, with an aggregate of 150 beds, had been set aside for the treatment of wounded sailors and soldiers, but this had not been allowed to encroach upon the accommodation for civilian cases. The chairman of the board of managers said that the number of civilian cases admitted was 9,982, a slight increase on the previous year. The number of sailors and soldiers admitted was 713. The daily average number of in-patients was 663.

ROYAL INFIRMARY, EDINBURGH.

From the annual reports of the Board of Managers it appears that the number of patients treated in the Royal Infirmary, Edinburgh, in the year ending September 30th, was 13,102, an increase of 284 on the previous year, which was the largest previously on record. The average daily number of patients was 903, compared with 847 in the previous year. In spite of this the deficit of ordinary income over ordinary expenditure showed a diminution of £9,687; at the same time the voluntary contributions had gone up by nearly £11,000, an increase of more than 50 per cent. The Board had set apart 200 beds for naval and military patients, and was prepared to give more if required; at the end of the year the number of such patients in the infirmary was about 160. To meet this special demand the managers had opened two spare wards and introduced extra beds temporarily in other wards; in addition a number of Territorial soldiers had been admitted to the general wards, and many of them had been submitted to operation to fit them for service. At the beginning of the war the managers had suspended the practice of charging for service patients in view of the great national emergency, but having learnt that other large hospitals had reconsidered their position in this respect, notice was given to the Admiralty and to the War Office that payment at the rate of 4s. a head a day would be accepted for all men treated after October 1st, 1915. The Army Council, however, had refused to make any donation in respect of the men who had been treated previously. Since the commencement of the war 61 nurses had been supplied directly to the War Office by the infirmary, and in addition a large number of former nurses were now serving in military hospitals. The complete roll contained 252 names, and of these 170 were on service abroad and 82 at home. The number of applications for nursing training had increased during the year from 695 to 1,051.

Ireland.

MAJOR EDWIN STEEL.

A LECTERN placed in the chapel of the Dr. Steevens's Hospital, Dublin, by the governors and staff to the memory of Major Edwin Bedford Steel, R.A.M.C., has been dedicated by the Archbishop of Dublin. Steel was for several years a resident pupil in the hospital, where the thoroughness of his work and the sterling qualities of his character made him many warm friends. He graduated in medicine in the University of Dublin in the summer of

1893, and in January, 1895, entered the Royal Army Medical Corps. He was for two periods in India, where he specially distinguished himself for his work in connexion with plague. He held the South African War Medal and the Durbar Medal. In August, 1914, he went to France in command of Field Ambulance No. 20, and for his work with it was mentioned in dispatches by Sir John French. In October, 1914, Steel was appointed Assistant Director of Medical Services with the First Cavalry Division. While on this duty he was, on November 23rd, wounded at La Clytte by shell fire, and died the same day. The handsome brass lectern in the chapel of his old hospital will form a visible token of the honour in which the memory of Edwin Steel's short but full life is held by some of those who knew and loved him well.

SMALL-POX IN COUNTY FERMANAGH.

Dr. McCormack, Local Government Board Medical Inspector, who attended a meeting of the Lisnaskea board of guardians, said that he had been directed to confer with the medical officer, Dr. Knox, in regard to the two reported cases of small-pox in the Fever Hospital. Isolation was absolutely necessary, and, in addition, systematic observation of all the contacts, along with the destruction, by fire, of the bedding and clothing that came in contact with the patients, the thorough disinfection of the infected premises, and the vaccination of all contacts. Those measures, so far as possible, had already been carried out by Dr. Knox. The nurses in the fever hospital had been vaccinated, and the small-pox cases were being treated in the upper, and the other cases of infectious disease in the lower, wards of the hospital. Communication between the nurse attending the small-pox cases and the nurse attending the other patients had been forbidden as far as possible. Should other cases of small-pox arise the board of guardians would have to consider the advisability of erecting a self-contained pavilion. The Lisnaskea Union was a "partially vaccinated community." In the Derrylin dispensary district there were 111 defaulters in the last quarter, which number was about equal to the annual birth-rate. The board should make arrangements to have primary vaccination carried out as quickly as possible.

England and Wales.

THE SANDLEBRIDGE COLONY FOR THE FEEBLE-MINDED.

THE report presented to the annual meeting of the Incorporated Lancashire and Cheshire Society for the Permanent Care of the Feeble-minded stated that the Mental Deficiency Act, 1913, had proved of great value in stimulating the work of the Sandlebridge Colony. A considerable number of committees formed under the Act had applied to the society for places, but it had been necessary to refuse the applications, as the provision for permanent care so far made at Sandlebridge had been only designed for inmates who had been received as children and suitably taught and trained. A subcommittee had, however, been formed to consider the possibility of building an additional house for lower grade children. The operations of the Elementary Education Act, 1914, had brought increased calls on the accommodation from educational authorities, and the vacancies at the disposal of the management were altogether inadequate. There had been a constant growth in numbers since the year 1902, when there were only 20 boys and girls in the institution, until at present there were about 300 inmates. Miss Dendy, the pioneer of the institution, gave an interesting account of the work done by the inmates. The girls had made 800 pairs of socks for soldiers since the war began and the boys had soled and heeled over 900 pairs of boots and shoes. The financial account showed a total income of £11,647, which included £7,630 from local authorities, and there was a credit balance of about £2,000. On the farm account there was a profit of over £620.

ATTENDANCE ON PANEL PATIENTS DURING THE WAR IN MANCHESTER AND SALFORD.

At a meeting of the Manchester Insurance Committee held on December 28th, the chairman, Mr. Walter Davies, in drawing attention to the minutes of the Medical Benefit Subcommittee, specially referred to the new commercial tariff, which provided that chemists should be paid in full. The arrangements had been completed, and Manchester and Salford would now work out a scheme for the two areas conjointly, while other parts of the country would be mapped out into areas. He hoped and believed that the chemists would now be satisfied, as they would receive their 100 per cent.

Mr. Davies also drew attention to the treatment of insured persons during the war. A large demand was now being made on the medical men of Manchester to join the forces, and the committee had had to consider two circulars, one from the Medical War Committee and the other from the Insurance Commissioners, setting forth what they felt was their duty towards the civil population. The committee had been in communication with the local War Committee and the Panel Committee, and they had agreed jointly to a scheme which would secure to every insured person adequate medical attention. Many of the Manchester doctors had entertained conscientious objections to the insurance scheme, and had refused to go on the panel, but they had now been appealed to on the grounds of patriotism, and it had been made clear to them that if some of the profession had to go to the war it would be necessary for non-panel doctors to render aid to insured persons. A scheme had now been arrived at whereby the whole of the panel doctors and also those not on the panel had agreed to attend any insured person who cared to go to them. The patriotism the doctors had shown in this matter deserved acknowledgement. Several members of the committee also congratulated the doctors on their patriotic action, and Mr. Davies further expressed the hope that while every effort was being made to obtain an adequate service, insured persons would not put any undue strain on the resources of the committee, but would only seek the services of a doctor when it was really necessary.

It appears that the position in Manchester is not quite so straightforward as described by Mr. Davies, as in a letter which appeared in the *Manchester Guardian* on December 31st, 1915, signed by Dr. E. W. Floyd, it is stated that it is incorrect to say that the non-panel doctors had agreed to treat panel patients. At a meeting of non-panel practitioners, held on December 29th, to consider the War Committee's proposals, the two following resolutions were passed with only three dissentients, who were members of the War Committee:

1. That this meeting of non-panel practitioners heartily supports the general lines of the scheme for the conservation of the private practice of practitioners on service.
2. That they cannot accept as it stands the scheme for attendance on insurance patients, but will require it to be expressly stated that home panel practitioners shall be responsible for attendance on all panel patients.

A copy of these resolutions to be sent to all the papers which published Mr. Davies's statement.

Canada.

CANADIAN GRADUATES AND THE R.A.M.C.

THE regulation by which a graduate of a Canadian medical school was required to obtain a provincial licence to practise before he could join the R.A.M.C., to which Sir Donald MacAlister made reference in his presidential address to the General Medical Council, has since been altered, and it is now possible for a graduate of any Canadian medical school of recognized standing to join the R.A.M.C. or the C.A.M.C. without first obtaining a licence to practise in the province in which he has graduated. The obligation has resulted in unfortunate delays and disappointments in the past, and its removal will facilitate the completion of arrangements between the Dominion of Canada and the Mother Country.

ALBERTA MEDICAL ASSOCIATION.

At the tenth annual meeting of the Alberta Medical Association, which was held at Banff, under the presidency of His Honour Lieutenant-Governor R. G. Brett, M.D., reference was made to the offer of a fully-equipped hospital of 1,040 beds for service overseas, made to the military authorities by the University of Alberta. The offer had been refused for the time being, but the

association wished to express its willingness to assist in the matter and accordingly the following resolution was passed:

> That the Alberta Medical Association puts itself on record as being strongly in favour of a scheme to form a hospital unit to be placed at the disposal of the War Office and to be called upon when required; and also that the Association is in favour of authorizing the Alberta College of Physicians and Surgeons to support, as fully as its finances will permit, the organization of the hospital unit.

The association also resolved to support the efforts of the Alberta Nurses' Association to obtain registration.

The subject of the presidential address was the "Social Evil." Dr. Brett quoted statistics to show the terrible effects of the two diseases considered under this heading, and strongly impressed upon the profession the necessity for further enlightenment of the public in the matter of prevention and cure. Other interesting papers were read, among them one by Dr. Whitelaw, medical officer of health at Edmonton, on the Public Health Act. The next annual meeting of the association will take place at Edmonton, under the presidency of Dr. Whitelaw.

SERUMS SUPPLIED FREE.

The Ontario Board of Health has announced its intention of supplying free, from February 1st, 1916, to physicians, hospitals, health boards, and the public generally throughout the province antitoxins and serums for diphtheria, small-pox, meningitis, tetanus, rabies, and other diseases. The appropriate material, which will be prepared in the laboratories of the University of Toronto, will be supplied free to any applicant, on presentation of a physician's prescription, by institutions formed by the department. It is estimated that for diphtheria alone from 150,000 to 200,000 doses may be needed within the year, and provision will be made for at least 500,000 doses of typhoid vaccine. During the present war the Ontario Board of Health has supplied large quantities of anti-typhoid vaccine for use amongst the troops. Down to May, 1914, the cost of serums annually imported into Canada was 120,000 dols. At that time, however, an arrangement was made with the University of Toronto whereby antitoxin could be supplied to boards of health and druggists at a much reduced rate. The splendid results obtained at the Isolation Hospital, Toronto, through the use of antitoxin in diphtheria, where the death-rate has been reduced from 16 to 6 per cent., has largely influenced the Board of Health in deciding to prepare the vaccine and supply it free of charge.

Correspondence.

OUR BELGIAN COLLEAGUES.

SIR,—The wind up of the year brings back to my mind the events which occurred a year ago at the same period, when you gave me the opportunity to expose to you the sufferings of my country-folk, the crimes committed in Belgium, the sad situation in which so many Belgian doctors and pharmacists were living.

Under the management of a medical committee, you immediately called upon the spirit of fellowship of the members of our corporation, and I enjoyed the moving consolation to find that your call was responded to from all quarters of the world.

On behalf of my colleagues in Belgium, and although I have been unable for a good while to communicate with them, I grasp this opportunity to deeply express to you, to the chairman and gentlemen of the committee, my heart-felt thanks for the lasting effort made by all of you during the past year. The voices of all those you have so generously assisted in their sufferings, of whom you may have saved life, cannot yet reach you; the Germans are still there to prevent it. Later on, when we shall be freed, when we will be able to think again and to express freely our feelings, they will tell you themselves—better than I could—the greatness of your assistance.

I will only now beg you to accept the gratitude of the Belgian doctors and pharmacists—the gratefulness of their little children, which must bless you at the distance.—I am, etc.,

London, W., Dec. 31st, 1915. C. JACOBS.

THE TONSILS.

SIR,—Arising out of your review of a monograph on *The Tonsils* by Dr. Barnes (U.S.A.), two letters have recently appeared in the JOURNAL, one from Dr. Mechan on December 25th, 1915, p. 948, and another from Dr. Syme on January 1st, 1916, p. 33, which appear to me to call for comment.

Dr. Syme lays it down without qualification that "when surgical interference is necessary" the "only operation applicable" is "enucleation of the tonsil"; that is to say, total removal of the whole tonsil *en masse* complete in its capsule. Whilst agreeing that total removal should be the operation of choice in the general run of cases, more especially in children, yet most of us would hesitate, and so probably would Dr. Syme, to eviscerate the entire tonsillar bed in trained singers and other adult professional voice users, on account of the danger of altering the form and deranging the muscular mechanism of the fauces from post-operative adhesions.

Dr. Syme makes no dogmatic statement as to the technique to be employed in effecting enucleation, holding doubtless that there is considerable room for eclecticism on that question.

Not so Dr. Mechan, however, who, while lauding complete removal by the old combined dissection and finger technique favoured by general surgeons thirty years ago, proceeds utterly to condemn the employment of the guillotine for the removal of tonsils. Dr. Mechan appears to be under the misapprehension (in common, doubtless, with many others) that the technique of the modern guillotine operation resembles that carried out in the last century, when many operators were satisfied with a sub-total removal. It was, however, shown in 1910 by Whillis of Newcastle and by Sluder of Chicago that in most instances the tonsils could be completely and rapidly enucleated by means of a modification of the Mackenzie guillotine method, provided the shaft was rigid and the edge of the blade was dull rather than sharp. The methods of technique employed by Whillis and by Sluder respectively, though differing in detail, are similar in principle, but it is unnecessary to my point to enter into particulars.

The outstanding facts are that most specialists now aim at the complete removal of a diseased tonsil *en masse* in the general run of cases, more especially in children, and that such enucleation can be carried out by experts, (1) in every case by one or other of the various modern dissection methods, (2) in nearly every case by the modern guillotine method alone, and (3) in a somewhat less number of instances by the snare and vulsellum only.

Many specialists, more especially those who favour the snare method, resort to a preliminary dissection in difficult cases and finish up either with the snare or with the blunt guillotine. Others prefer and employ some form of dissecting method throughout as a routine measure, without resorting to the snare or guillotine, either alone or as an adjunct. Such an attitude of personal preference for dissection methods, however, does not imply any agreement with Dr. Mechan's allegations as to the inutility of the Mackenzie type of guillotine in radical removal of diseased tonsils, whether enlarged or otherwise. In many clinics in this country, where school children are operated on, and where nothing less than total removal of the tonsils is invariably aimed at, the enucleating guillotine method of Whillis alone is consistently and successfully employed for that purpose.

It may be mentioned that to such a pitch of perfection has enucleation with the guillotine been brought that La Force in America and Elphick in this country have actually gone so far as to devise haemostatic guillotines in order to deal with enlarged tonsils in haemophilics and in anaemic children.

The whole subject was recently reviewed in a paper by the last-named and myself, read at the annual meeting at Aberdeen in 1914, and published in full in the *Journal of Laryngology*, December, 1914.[1]—I am, etc.,

London, W., Jan. 4th. WILLIAM HILL.

THE AUSCULTATION OF THE HEART.

SIR,—I think it is time we recalled the motto, "Honour where honour is due." Is it not the fact that the late

[1] A short abstract was published in the BRITISH MEDICAL JOURNAL, 1914, vol. ii, p. 1019.

Dr. George Gibson of Edinburgh was the first to point out that murmurs are not evidence of heart disease? I have heard him relate that many times he had secured admission of young candidates for commissions in the army by means of delay and a period of rest. I think it is also the fact that Sir James Mackenzie pointed out in his address in memoriam of this great physician that it was he who had shown the way in all the new discoveries in regard to heart pathology and diagnosis.—I am, etc.,

W. HALL CALVERT Capt. R.A.M.C.(T.).

Crieff, Dec. 29th, 1915.

THE DEMAND FOR LOCUMTENENTS.

SIR,—May I through your columns appeal to practitioners requiring locumtenents during their absence at the front or otherwise not to be misled by misrepresentations that, owing to the scarcity of men, they will have to pay 9 or 10 guineas a week to secure deputies? As a matter of fact, owing to the generous way in which retired and elderly practitioners have come forward to assist, besides those returning from the front and those ineligible for military service, the supply of locumtenents is at present in excess of the demand, and trustworthy men can be had at 7 guineas a week in most cases, or less if with their wives, and in the interests of recruiting I trust all requiring help will refuse to pay the excessive fees in some cases demanded, especially by men who should be doing their duty in the R.A.M.C.—I am, etc.,

London, W.C., Jan. 3rd. PERCIVAL TURNER.

STATE REGISTRATION OF NURSES AND THE RED CROSS SCHEME.

SIR,—The circular from the Red Cross Society on the proposed nursing college* is an immensely important matter, and the hospitals of the country should be very wide awake. After the war the nursing profession runs the risk of being flooded by partially-trained nurses.

The nurses should claim to be put under similar government to the Central Midwives Board. The hospitals of the country must take prompt action to nip this Red Cross scheme in the bud. Let them force Government action, so as to have State regulation and guarantee of the training, examination, and registration of nurses. There is grave risk of the status of the nursing profession being seriously lowered.—I am, etc.,

Wigan, Jan. 4th. FERDINAND REES.

Universities and Colleges.

UNIVERSITY OF LONDON.

MEETING OF THE SENATE.

A MEETING of the Senate was held on December 15th, 1915.

Treasury War Grants.

It was reported that the Lords Commissioners of the Treasury had, on the recommendation of the Advisory Committee on University Grants, made, under certain conditions, a special grant to the University of £3,500 in respect of the years 1914–15 and 1915–16 together to cover loss of income caused by the war, and that grants of £10,500 and £7,000 respectively had been made by the Treasury to University College and King's College for the same purpose. It was resolved to transmit to the Treasury the thanks of the Senate for the grants.

Brown Animal Sanatory Institution.

Dr. Edward Mellanby, M.D., was appointed Acting Superintendent of the Brown Animal Sanatory Institution during the absence of the Superintendent, Mr. F. W. Twort, who had received leave of absence in order to organize, for the War Office, base laboratories in the Eastern theatre of war.

Professor of Protozoology.

Dr. H. M. Woodcock, assistant to the Professor of Protozoology, was appointed acting head of the Department of Protozoology at the Lister Institute of Preventive Medicine, and was subsequently granted leave of absence to undertake special service at one of the Mediterranean base hospitals.

Personnel of the Senate.

It was reported that Professor F. W. Andrewes, M.D., F.R.C.P., F.R.S. (St. Bartholomew's Hospital Medical School), and Sir Cooper Perry, M.D., F.R.C.P. (Guy's Hospital Medical School), had been appointed the representatives of the faculty of medicine on the Senate, in the place of Mr. H. L. Eason, M.D., M.S., and Sir Wilmot Herringham, C.B., M.D., F.R.C.P., resigned.

* See page 60.

Chairmen of Committees.

Sir Rickman Godlee, Bt., K.C.V.O., and Sir Seymour Sharkey, M.D., F.R.C.P., have been elected chairmen of the Brown Animal Sanatory Institution Committee and the Graham Legacy Committee respectively.

University Medal.

The university medal at the M.B., B.S. examination for internal and external students, October, 1915, has been awarded Geoffry Challon Linder of St. Bartholomew's Hospital.

Gilchrist Studentship for Women.

Applications for this studentship must reach the Academic Registrar not later than the last day of February. The studentship is of the value of £100, tenable for one year by a graduate of the university who is prepared to take a course of study in an approved institution for some profession. Candidates must have graduated in honours in the University of London, and must be of not more than three years' standing from their first graduation.

UNIVERSITY OF SHEFFIELD.

THE following have passed the examinations indicated:

THIRD M.B., CH.B.—G. E. Hill, Elizabeth E. Jenkins, R. H. Rao. D.P.H.—Beatrice Garvie.

UNIVERSITY OF EDINBURGH.

THE annual report for 1915 states that the total number of matriculated students was 1,853, being 676 fewer than for 1914, and 1,408 fewer than for 1913. There were 807 students, including 11 women, in the Faculty of Medicine, a decrease of 218. Of the students of medicine, 382, or over 47 per cent., belonged to Scotland; 122, or over 15 per cent., were from England and Wales; 30 from Ireland; 80 from India; 193, or nearly 24 per cent., from the British Overseas Dominions and Dependencies; and 26 from foreign countries.

The University roll of war service—embracing members of the staff, graduates, and students, past and present—which a year ago contained about 1,700 names, has now reached a total of nearly 4,000, to which should be added about 400 who are members of the Officers' Training Corps. The University authorities have renewed, with modifications, various concessions made last year to students on service; and a number of scholarships, etc., which would, in ordinary course, have been tenable or open for competition this session, have been in the meantime suspended.

During the year the bequests of the James Cropper and the Waldie Griffith Scholarship Funds for the medical education of women in Edinburgh, were handed over to be administered by the university authorities, and the balance of the funds left over on the winding up of the Scottish Association for the Medical Education of Women has been given to the University Court for the foundation of an annual prize for a woman student qualifying in medicine.

The Services.

EXCHANGE DESIRED.

ROYAL ARMY MEDICAL CORPS.

A LIEUTENANT R.A.M.C. (temporary), at present stationed in Lancashire, desires to exchange with an officer holding a temporary commission in or near London. In addition to his military duties the applicant is on the staff of the local military hospital. Applications should be addressed to No. 200, BRITISH MEDICAL JOURNAL Office, 429, Strand, London, W.C.

DR. HOWARD A. KELLY, of Baltimore, has given to the Johns Hopkins Hospital of that city more than 4,000 volumes, including books, monographs, and periodicals. The collection, which for the most part consists of literature dealing with obstetrics and gynaecology, is valued at £5,000. It is proposed to erect a suitable building for its reception.

THE bicentenary of the firm of Allen and Hanburys was celebrated last month, when the employees at home and abroad presented to the vice-chairman his portrait, painted by Mr. Percy Bigland, and to Mr. W. Ralph Dodd, a director, a silver centrepiece. The business was established in the City of London in 1715, and though the buildings have been rebuilt the site is the same. We gather that the business was founded by Mr. Silvanus Bevan in Plough Court, and that the first bearers of the name by which the company is now known were William Allen, F.R.S., President of the Pharmaceutical Society on its foundation in 1841, and Daniel Hanbury, F.R.S., whose name and work are commemorated in the Hanbury medal. Among the members of the firm at this time is Mr. Cornelius Hanbury, who joined it as a partner nearly sixty years ago; while Mr. F. J. Hanbury, the vice-chairman, has belonged to it for some forty years.

Obituary.

GEORGE OLIVER, M.D., F.R.C.P.,

FORMERLY OF HARROGATE.

IT is with deep regret that we announce the death of Dr. George Oliver, which occurred at his residence, "Riversleigh," Farnham, Surrey, on December 27th, 1915.

He was born in April, 1841, and was the second son of Mr. W. Oliver, a surgeon of Middleton-on-Tees, Durham. He was educated at Gainford School, Yorkshire, and having decided to adopt his father's profession he proceeded to University College, London, and University College Hospital, where he had a brilliant academic career which culminated in his taking the Gold Medal at the M.D. examination of the University of London in 1873. Even in these early days he gave evidence of a truly scientific conception of his work, and he always had a deep admiration for William Sharpey, who was Professor of Physiology at University College in those days.

He started practice at Redcar, but he only stayed there a few years. In 1875 he went to Harrogate, where he speedily acquired a large practice, first as a general physician and subsequently as a consultant. He spent altogether thirty-three years at Harrogate, and was recognized as the highest authority there in the special branch of practice associated with that town. During the later portion of this period he used to reside at London or Sidmouth during the winter, only living at Harrogate for the season. In 1901, however, he purchased his beautiful Surrey home, where he spent the winter months, and it was not until 1908 that he entirely relinquished his Harrogate work.

This freedom from the claims of a busy practice during a long period of each year enabled him to prosecute original research, which he loved; some of this was carried out in the Physiological Laboratory, University College, London, but a good deal in his private laboratory in his own house. He was always clever at any mechanical device, and most ingenious and resourceful in overcoming difficulties. He wrote extensively not only on the Harrogate waters, but also on urine testing; the fourth edition of his *Bedside Urine Testing* was published in 1889, and his originality here was shown by the invention of the testing papers known as "Oliver's test-papers."

But it was always the blood and its circulation that most attracted his attention, and one instrument after another dealing with this branch of science was brought before the notice of the medical world; his haemacytometer, haemoglobinometer, arteriometer, and sphygmometer are instances. He will be especially remembered for his work in connexion with blood pressure; he it was among British physicians who chiefly insisted on the importance of estimating blood pressure in diagnosis, and the instruments of precision he introduced for this purpose will live long and keep his memory green. His book on *Blood Pressure* rapidly passed through two editions, and at the time of his death he was actively engaged in the preparation of a third, in which the book was practically rewritten. It is earnestly to be hoped that this work, which was nearing completion, may ultimately see the light.

Another branch of medical science to which he devoted himself was that relating to the ductless glands, and he published papers on the suprarenal, thyroid, thymus, and pituitary bodies. In this direction he is perhaps best known by the epoch-marking paper, published in conjunction with Professor Sir Edward Schäfer on the suprarenal glands. This really formed the foundation for all the enormous amount of subsequent work on the adrenal body which has resulted not only in the elucidation of the functions of this formerly mysterious organ but also in the discovery of the active principle, adrenalin, one of the greatest boons to suffering humanity. Although Addison many years ago had dimly conjectured the use of the suprarenal capsule, it was not until Oliver and Schäfer published their famous paper that any clear light was thrown upon the subject.

In 1887 Dr. Oliver was elected Fellow of the Royal College of Physicians of London, and a few years later, with characteristic generosity, he founded there, in memory of his old master Sharpey, the lectureship which now bears the name of the Oliver-Sharpey Lectureship. Dr. Oliver was most suitably chosen as the first lecturer under this trust, when he took as his subject, "Studies on tissue-lymph" (1904). He had previously filled the position of Croonian lecturer at the same college (1896), which gave him the opportunity of bringing prominently before the profession the importance of a study of blood pressure.

This does not by any means exhaust the list of his writings, for he contributed largely to the journals, and also to standard works, such as *Quain's Dictionary of Medicine*, for which he wrote articles on constipation and on other ailments of the bowels. He was thus a man of wide attainments; his recreations included photography, in which he became an expert, and until the last few years he took his exercise mostly in the form of bicycling. He was never a man of strong physique, but, in spite of this, continued to live an active and strenuous life. About five years ago he had an attack of haematemesis, from which he fortunately quickly recovered; for about a month before he died he suffered from some bronchial catarrh, and the coughing so occasioned evidently strained the weak spot in his gastric lining. On Christmas night he was again seized with bleeding, which no remedy could check, and in two days he peacefully passed away.

His great aim throughout life was to make medicine a more exact science than he found it, and none can deny that he succeeded in this great endeavour; the keynote of his success, both at the bedside and in the laboratory, was untiring perseverance; he was never satisfied with anything that was imperfect, but went steadily on, altering and improving his inventions until they gave absolutely correct results. It was the same with his writings: he wrote and rewrote each sentence until it was absolutely clear, so as to express his meaning in the fewest possible words. He never hesitated to change his views when necessary, and much of what he wrote in his earlier editions was consequently amended as his apparatus was perfected and gave him results which corrected those obtained with less perfect instruments.

He was a man of a singularly sweet, genial, and unselfish disposition, which endeared him to his patients and his friends. He will be greatly missed not only in the scientific world, but also by the large circle of his personal friends in Yorkshire, London, and Surrey.

During the time he was at Redcar he married Alice, the only daughter of Mr. J. Hunt, of Barnard Castle, by whom he had one son and one daughter, who survive him; she died in 1898. In 1900 he married again Mary, daughter of Mr. W. Ledgard, of Roundhay, Leeds, and she also survives to mourn her irreparable loss. He was buried in the churchyard of the peaceful little church at Tilford on December 31st, the church which he used so faithfully to attend.

SIR GEORGE SCOTT ROBERTSON, K.C.S.I., M.P.

WE regret to have to record the death of Sir G. S. Robertson, so well known as the defender of Chitral in 1895. He was born in London in 1852, but both his parents belonged to Orkney families. He received his medical education at the Westminster Hospital Medical School, and took the diploma of L.S.A. in 1876, and that of M.R.C.S. in 1877. He entered the Indian Medical Service in 1878, and his first Indian experience was the Afghan war of 1879–80, when he served in the operations in and round Kabul in December, 1879, in the affair of Shekhabad, and in the operations in Kohistan, receiving the medal with a clasp. He then went into civil employment in the North-west, now the United Provinces, serving as civil surgeon successively of Bahraich, Meerut, and Ghazipur. In 1888 he entered the service of the Foreign Department as agency surgeon of Gilgit, a small dependency of Kashmir, on the extreme north-east frontier of the Indian empire. In 1890–91 he made a solitary expedition through Kafiristan, being the first European to explore that country, and gave an extremely interesting account of the year he spent amongst the wild hillmen in his first book, *The Kafirs of the Hindu Kush*. It was published in 1896, and in the interval he had an opportunity of showing his diplomatic powers in dealing with the hillmen when acting as chief political officer of the Hunza-Nagar expedition in 1891-92. For his services on this occasion he received the Frontier medal and was nominated C.S.I. In 1892 he installed the Mir of Hunza in the presence of the

Chinese envoys. Afterwards he was sent on a mission to Gor, was besieged in the Thalpen entrenchment, and present at the capture of Chilas. The following year he was sent on a political mission to Chitral at the extremity of the tribal country over which the Government of India exercises influence. In 1895 the ruler of Chitral was murdered by a rival, and the position of Robertson with his British and Sikh forces of 543 men, of whom 139 were non-combatants, became critical. The siege of Chitral began on March 4th, 1895, and it was not until April 20th that the relieving force arrived to find Robertson severely wounded. He was able, however, in September of the same year to instal the present ruler of Chitral. He was created K.C.S.I. in 1895, and appointed British agent in Gilgit. Afterwards he was political officer in charge of the late Ayub Khan. He was promoted surgeon-major in 1890 and lieutenant-colonel in 1898. He retired in 1899.

In the year after he came home Robertson contested Stirlingshire in the Liberal interest unsuccessfully. He was elected for Central Bradford in 1906. He did not achieve any prominent position in the House of Commons, but had recently shown by speech and question his anxiety to arouse the House and the Government to a sense of the peril in which the country stands.

In 1898 he published in a volume, entitled, *Chitral: the Story of a Minor Siege*, a very modest account of the events of 1895. He was an honorary D.C.L. of Trinity University, Toronto. He was twice married, and his second wife, the daughter of Mr. Samuel Laurence, the painter, survives him.

ALBERT WESTLAND, M.D.,

ABERDEEN (FORMERLY OF HAMPSTEAD).

WE regret to announce the death of Dr. Albert Westland, M.D., formerly of Belsize Park, Hampstead, and, for the last seventeen years, of Aberdeen, where he died on December 31st, 1915, at the age of 62. He had been ailing for the last year of his life, and was unable to attend to the numerous duties in which he was interested.

Dr. Westland was a son of the late Mr. James W. Westland, manager of the North of Scotland Bank, and was a brother of the late Sir James Westland, C.S.I., who had a distinguished career in the Indian Civil Service. In 1872 he obtained the degree of M.A., and in 1875 graduated M.B., C.M. with highest honours, being awarded the John Murray Medal and Scholarship as the most distinguished medical graduate of the year. In 1877 he proceeded to the degree of M.D.

After a visit of a few months to the Paris school of medicine and a short assistantship at Highgate, he became engaged in large and influential general practice in Hampstead, and here he practised from 1877 to 1898; during that time he gained the affection and respect of an ever-increasing *clientèle*, and his kindness, his skill, and his devotion to duty were recognized by his patients and friends in the presentation of a substantial testimonial when he left Hampstead to reside in his native city of Aberdeen. In Aberdeen he took a great interest in public affairs, local and imperial. He was an active and influential member of the Town Council for three years, and when, on account of his advocacy of a new scheme for water supply for which the inhabitants were not prepared, he was thrown out in an election in 1910, he did not seek re-election. He was often named as a probable Lord Provost of the City of Aberdeen, and had he consented to resume his connexion with the town council he would doubtless have been promoted to the civic head of the community. Dr. Westland had also been a member of the Aberdeen University Court as one of the representatives of the General Council since 1905.

His long residence in London made him thoroughly conversant with the conditions of English medical practice and with the views of graduates of the university resident in the metropolis and the south, and as a member from its foundation of the Aberdeen University Club in London, of which he was a vice-president, he had continuous opportunities of meeting and conferring with brother graduates of the university. Dr. Westland was strongly in favour of placing modern languages and literature on an equal footing with classics, and urged that in the medical curriculum more time should be given to clinical study and that there should be a closer relationship between the medical school and the infirmary. During his tenure of office as a member of the court Dr. Westland took a considerable part in the organization of the quatercentenary celebrations, while he also assisted in bringing about important changes and reforms in the arts and medical curricula.

He was a ready and effective public speaker, and became president of the Aberdeen Liberal Association. He presided at the last meeting held in Aberdeen addressed by Mr. Lloyd George, but a few weeks after this meeting he publicly resigned the presidency as he resented the treatment meted out to the medical profession by the Insurance Act.

Dr. Westland was co-editor of the *University Review*, and when in London practice he wrote *The Wife and Mother* and *The Child*. Of these two works the former especially has been appreciated ever since it was published, and has gone through several editions. He was also editor of Thomson and Steele's *Dictionary of Domestic Medicine and Surgery*. Dr. Westland will be much missed. To his intimate friends he was known as a most engaging and delightful conversationalist. In university circles he will be particularly regretted, and he has left behind him the memory of a pleasant nature and a high record for diligence, ability, and integrity in the discharge of professional and public duty. He leaves a widow and two daughters.

ANDREW DUNLOP, M.D.EDIN., D.P.H., F.G.S.,

JERSEY.

BY the death of Dr. Andrew Dunlop, which occurred at his residence at St. Helier, on December 30th, 1915, the profession in Jersey has lost its esteemed doyen. Recently Dr. Dunlop had been in failing health, and had suffered from heart trouble, but he had continued actively at work almost to the last, and the end (from cardiac failure) came rather suddenly. His death has called forth expressions of genuine regret and sorrow among all classes of the island community. Eloquent and emphatic testimony is borne in the local press to the affection and esteem with which he was regarded, special reference being made to his high personal character, his generosity, his native courtesy and gentleness, his genuine kindness and considerateness towards all seeking his advice, quite irrespective of class or station.

Dr. Dunlop received his medical education in Edinburgh, and graduated M.D. there in 1863. He settled in Jersey in 1868, and soon acquired an extensive general practice. His success was upon every ground well merited, and never left him. His fidelity towards his patients was absolute, and in the case of very many he was also the personal valued friend. So also towards his medical *confrères*, his loyalty and kindness were never in doubt. Dr. Dunlop held several honorary positions and appointments in connexion with the Jersey General Dispensary and other institutions, to which he devoted much time. He was one of the original founders of the Jersey Medical Society, was for a time its honorary secretary, and subsequently for some years its president. His medical contributions were numerous—an article on rupture of the heart written so far back as 1866 (*Edinburgh Medical Journal*) may be mentioned specially—all being marked by care and painstaking accuracy. In addition he was an enthusiastic geologist and contributed papers, all of interest and value, upon local geological features, as also on anthropology, to the leading scientific society in the island, the Société Jersiaise.

Recent years brought sad trouble in Dr. Dunlop's domestic circle—the death of a much-loved daughter, the loss of two sons in the South African war, and in the present conflict the falling of three other heroic sons, killed in action fighting for their country. The general sympathy—inclusive of royal condolence—has gone out towards the sorely stricken yet resolute parents in their heavy bereavement.

Dr. Dunlop was at one time Surgeon-Lieutenant-Colonel and Principal Medical Officer of the Royal Jersey Militia. He was 73 years of age. He leaves a widow, a married daughter, and two sons to mourn the loss of an attached and devoted husband and father.

IT is with great regret we have to record the death, on December 17th, 1915, at the age of 55, of Dr. C. S. MORRISON, Physician-Superintendent of Hereford County and City Asylum. He was the second son of Malcolm Brown and Rosalie Olivia Morrison, of Bhagalpur, and was born in India. He was educated at the University of Calcutta and the Royal College of Surgeons of Edinburgh. After taking the triple qualification in Scotland, he was for a time family physician to the late Earl of Elgin. Afterwards he was assistant medical officer to the Derby Asylum, and later was selected to fill a similar position at the County and City Asylum, Hereford, where he assisted his chief, Dr. T. A. Chapman. On Dr. Chapman's retirement a few years later, Dr. Morrison was appointed medical superintendent, which post he held until the day of his death. During his twenty years' service as medical superintendent he proved himself to be a skilful physician and a capable administrator, and was considered by the profession generally to be an authority in his speciality. As assistant medical officer he was one of the first to be selected to be put on the council of the Medico-Psychological Association, and afterwards was placed on the committee appointed to revise the constitution of that association with a view to assistant medical officers taking a more important part in its affairs and to revise the scientific work, which had gradually been allowed to take a secondary place in the affairs of the association. He took part in many debates when alterations were proposed which would give younger and junior members a more leading position than had been previously the case. He addressed himself to the assistant medical officers of that day, and by his vigorous action and forceful arguments he effected his purpose, and the existing constitution of the association, which has expanded its work and prosperity, was largely due to his unflagging efforts. He was Vice-President of the Section of Neurology and Psychological Medicine of the annual meeting of the British Medical Association when it met in Birmingham in 1911, and was recently President of the Worcestershire and Herefordshire Branch of the British Medical Association, and had for a considerable time acted as secretary, when he successfully worked to revive scientific work, which had been flagging for some years. Dr. Morrison was a man of many parts, courteous, sympathetic, and kindly. He enjoyed public respect and the affectionate regard of his afflicted patients, who learned to value him as their trusted and beloved friend. His love for the suffering poor was conspicuous, and his consideration at all times given them, irrespective of caste or creed.

DR. JOHN RIMINGTON FOTHERGILL died at his home in Darlington on December 13th, 1915, in his 91st year. He was the senior magistrate of the borough, and was for many years honorary physician to the Darlington Hospital. After studying in Edinburgh he took the diploma of L.R.C.S. in 1850 and the degree of M.D. St. Andrews in 1867; he joined his father in 1848, and remained in active practice for about thirty years. He then partially retired, but continued to work as a consulting physician for another twenty years. Dr. Fothergill took an active part in the civic, philanthropic, and political life of Darlington. He remained strongly Liberal throughout his life. An enthusiastic fisherman, he was constantly seen on the river Tees during the salmon season. In his younger days he was a keen fox-hunter. He was the son of John Fothergill, M.R.C.S., who left his native Wensleydale to practise in Darlington about one hundred years ago. Thus John Rimington was born just about the time when the world's first passenger train began to run between Darlington and Stockton-on-Tees in 1825. He was not a great writer, but he published his personal observations of a case of hydrophobia, and of a case, probably the first, in which he used chloroform in 1848 for the relief of puerperal eclampsia. John Fothergill, the London physician who died in 1780, was a great-great-uncle of the deceased.

DEATHS IN THE PROFESSION ABROAD.—Among the members of the medical profession in foreign countries who have recently died are Dr. Piero Baj, editor of the *Pensiero Medico;* and Dr. Adolphe Blin, professor in the Medical School of Rennes, serving as surgeon-major and head of the temporary hospital No. 30, in that town, aged 63.

Medical News.

ON the afternoon of Tuesday, January 18th, a discussion on the treatment of soldier's heart will be opened by Sir James Mackenzie before the Section of Therapeutics and Pharmacology of the Royal Society of Medicine.

AT the meeting of the Society for the Study of Inebriety in the rooms of the Medical Society of London, Chandos Street, W., on Tuesday next, at 4 p.m., Mr. John Turner Rae, Secretary of the National Temperance League, will open a discussion on the study of inebriety in the light of two wars.

THE usual monthly committee meeting of the Medical Sickness Accident Society was held on December 17th, 1915, with Dr. F. J. Allan in the chair. The reports submitted showed that during the month of November the claims for sickness had risen slightly above expectation, but that for the whole year, so far, the total experience had been below the total expectation. It was reported that new proposals received were greater in number than those for the same period in the preceding year. The number of additional proposals received has been fairly well maintained. One satisfactory feature noted was the increase in the combined sickness and accident and life assurance contracts issued, and the tendency among existing members to avail themselves of the opportunity of increasing their insurances in the society by the addition of endowment life assurances, payable at the age of 65, or previous death. The number of claims from members on active service had, fortunately, been few in comparison with the total number serving in the Royal Army Medical Corps and similar forces. The complete figures will probably be included in the chairman's speech at the next annual general meeting. The soundness of the financial administration of the society during its thirty-three years of existence is of decided import to members under the present disturbed conditions. The practice of writing down Stock Exchange securities, when necessary, has shown itself to be a wise one, in view of the heavy fall in stock values. It is anticipated that a further sum will have to be written off investments at the close of this year, but practically all the society's holdings are stocks repayable at par at fixed dates. Members of the medical profession would be well advised to avail themselves of the society's insurance against sickness and accident, and any desirous of so doing can obtain all information on application to the Secretary, Medical Sickness and Accident Society, 300, High Holborn.

THE large building known as the Grand Palais, Paris, was early last year converted into a hospital for the physical treatment of sick and wounded soldiers, mainly those suffering from disabling conditions of the limbs. There are separate departments, under medical direction, for baths, electricity, massage movements manual and by apparatus, and for radiology. Dr. Fortescue Fox, who has described this "complementary" hospital in the *Journal of the Royal Army Medical Corps*, states that for stiff and disabled joints and muscles the best results have been obtained by a combined treatment, in which the limb is submitted first to a bath and then to massage and movements. The favourite bath method is by the local hyperthermal bath known as *eau courante*. There is a continual current through the bath, and its temperature can be regulated in a mixer provided with valves. The motion may be that of a gentle stream or a miniature whirlpool. The temperature, checked by the mixer and by a thermometer in the bath, varies from 104° to 122° F., but is usually given as hot as can conveniently be borne for fifteen to twenty minutes daily. The method is said to give results superior to still water at the same temperature, or to the ordinary douche, or hot air or electric radiation baths. The circulation in arteries, capillaries, veins, and lymphatics is stimulated, and there is great vaso-dilatation, but the effect on the nerve endings is sedative. The pain, swelling, and stiffness are diminished, and the mobilization of limbs, either by the hand or by apparatus, is greatly facilitated. The local bath used for the upper limb resembles a small hip bath mounted on a tripod; that for the lower limb, in which the water is admitted at any part of the bath and runs out by a tube at the upper end, is an obliquely-placed cylinder. Recently the bath was being used in 400 cases a day, massage and mechanotherapy in 800, and gymnastic exercises and electrotherapy in 500. We are informed that a hyperthermal bath apparatus is now available in London, and that particulars can be obtained on application to the Secretaries of the committee on the after-treatment of soldiers established by the Balneology Section of the Royal Society of Medicine of London, 1, Wimpole Street, W.

Letters, Notes, and Answers.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish office of the British Medical Association is 16, South Frederick Street, Dublin.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

FERGUSSON'S SPECULUM.

GYNAECOLOGIST inquires where the first account of this instrument is to be found. The inventor was, he understands, Dr. W. E. Laing Fergusson, who was in practice in Claremont Square, N., forty years ago, and, according to the *Medical Directory*, died on April 25th, 1880. There is no obituary notice of him in the medical journals of the period nor in the *Transactions* of the Obstetrical Society of London. He must be distinguished from Sir William Fergusson, the eminent surgeon, and Ferguson (*one* s), the surgical instrument maker in Smithfield.

LACTATION AMONG THE JAPANESE.

A CORRESPONDENT seeks for information as to the usual age at which Japanese children are weaned, and as to what effect, if the age be more advanced than in Europe, the custom has on lactation and pregnancy amongst the women of the race.

*** Remy in 1883 wrote: "Among the details of Japanese hygiene I have been especially struck by the manner in which children are fed and brought up. They are suckled by the mother until the age of 5 or 6 years. They run after their mothers asking for the teat in a correct language. The manner in which the age of a child is reckoned may occasion an error of more than a year. However, during a long period the child depends entirely on its mother; artificial lactation is unknown; the mother considers it a duty to suckle her babies." This is a translation of Remy's notes (*Archives gén. de méd.*, vols. i and ii, 1883) by Dr. Albert Ashmead in an article "On the Non-existence of Rachitis in Japan," published in the New York *Medical Record*, vol. xxxviii, October 11th, 1890, p. 399, the author adding a further quotation from Remy: "There is, however, a result of the lactation which I would above all clearly represent. The rachitic (*sic*) does not exist in Japan. I never met him, neither among the children nor among the adults; neither in city, nor in country, nor in hospitals. The physicians, native and foreign, whom I consulted are aware of no single instance."

REBATE ON MOTOR SPIRIT.

HILLMAN made a claim for rebate on motor spirit to the local officer of Customs and Excise some months ago, but has heard nothing of the matter even after repeated reminders. He inquires as to the proper quarter to which any complaint should be addressed.

*** The local officers appear to act under the Surveyor of Customs and Excise, whose name and address our correspondent may be able to obtain from the local directory; if the complaint is to go to head quarters the appropriate address would be: The Secretary, Board of Customs and Excise, Customs House, London.

INCOME TAX.

NETINCOME desires information as to the proportion of rent or rental value and other semi-professional expenses deductible for income tax purposes.

*** The deduction to be made in respect of rental value is "such sum not exceeding two-third parts . . . as the Commissioners shall allow" (Sections 100 and 101 of the Income Tax Act of 1842). In most cases the proportion appears to be settled between the person making the return and the surveyor of taxes, but the Commissioners are the authorities for determining the amounts and, where agreement cannot be arrived at, they will decide the question on appeal. Where rents are high it does not necessarily follow that a larger proportion should be allocated to the professional part of the premises, seeing that the whole of the house would be affected by the local conditions of rent. The rental value as assessed includes the ground rent, and that payment does not constitute a separate subject for deduction; if income tax is—as it should be—deducted from the ground rent on payment, then the occupier of the property has not ultimately paid any tax on that portion of the rental assessment which refers to the ground rent. The proportion for dividing the rent will also apply to the rates and inhabited house duty paid on the premises. The sum to be divided is not an arbitrary estimate of the value but the actual sum upon which income tax has been paid for the year covered by the professional statement of receipts and expenses. There are decided cases which make it quite clear that no deduction can be made by way of sinking fund or otherwise for the expiry of a lease. A payment of income tax is not a deductible expense. The only restriction with regard to the wages of servants, lighting, heating, etc., appears to be that the deductions shall be reasonable having regard to the amounts fairly attributable to professional rather than to private services. No general rule is—or perhaps could be—laid down, the matter being one capable of such wide variation that each case is apparently considered on its own merits. It should not be overlooked that the cost of a servant's food is in effect a part of his or her wages.

LETTERS, NOTES, ETC.

THE Temperance Collegiate Association offers two prizes of 10 and 5 guineas respectively for essays on heredity as a factor in alcoholic degeneration. The characters which the essay should possess can be obtained on application to the Secretary, "Strathblane," Alexandra Park, Nottingham. The Science and Education Committee of the National Temperance League is willing to consider applications addressed to its secretary, Paternoster House, London, E.C., from university and hospital students in physics and medicine for financial assistance in carrying on research or making investigations.

WHOOPING-COUGH AND KINKHOST.

A CORRESPONDENCE was started recently in *Nature* by an incidental statement to the effect that the word "chincough" meant "hiccough." This was contested by a correspondent, who said that it was applied to whooping-cough in the north of Ireland, and suggested that it might have something to do with the French *chien*, a dog. This rather wild piece of etymology was promptly denounced by more than one correspondent. It was pointed out that "kinkhost" was good and common Scottish for whooping-cough, and that "kink" was used for the paroxysm not only in Scotland but in the north of England, as well as, we believe, in some parts of North America. Other correspondents stated that the term "kinkhoest" was used in Holland and Belgium for whooping-cough, and the similarity to the German "Keuchhusten" was mentioned. Authorities were quoted for the derivation of "kink" from "krik" or "kuk," an imitative word meaning to gasp, which is also the basis of cough. A remark in this correspondence to the effect that *coqueluche*, the French wor for whooping-cough, was more puzzling, has brought us an interesting note from Dr. Lawrence Oliphant of Glasgow.

Coqueluche, he writes, is a name transferred from an epidemic disease (resembling influenza or *grippe*) to whooping-cough in recent times. Littré, quoting Ménage, suggests a derivation from *cucullus* through *cuculiccio*, and the word *coqueluche* originally meant a hood or "capuchon." This is borne out by its use as the name of a bird (reed-hunting) with black and white head. A. Paré's use of the word, as also d'Aubigné's, suggests influenza. Rabelais, in the list of books in the Library of St. Victor, has "la coqueluche des moynes," glossed by Lacroix as "rhume et capuchon"—that is, both *flu* and hood. Smith translates "wheeziness"; Urquhart "cowl or capouch." In the *Dictionnaire Général*, Hatzfeld and Darmesteter say that the etymology is unknown, but also give "hood" as the original meaning of the word. In any case, its use as meaning "Kinkhost" is recent, so that the words are probably not related. As to *Keuchen*, Kluge (*Etymologischen Wörterbuch*) seems to make it cognate with English "cough." Mid High German *Kichen*, from Germanic *skik*—that is, sign for root—which in Low German, Netherlandish, and English is nasalized; Holstein, *Kinghosten*; Netherlandish, *Kinkhoest*; M.E., *chincough* for *chinkcough*; compare Swed. *Kikhosta*, Dan. *Kighoste*, Anglo-Saxon *cincung*; in which case our "kinkhost" is just a coughcough!

The fail-me-never Cotgrave (1611) gives "Coqueluche, f., a hood; also the Coqeluchoe, or new disease; which troubled the French about the yeares 1510 and 1557, and us but a while agoe." Ménage (1650) also gives information about the epidemics and the use of the word "coqueluche" from 1414 onwards.

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